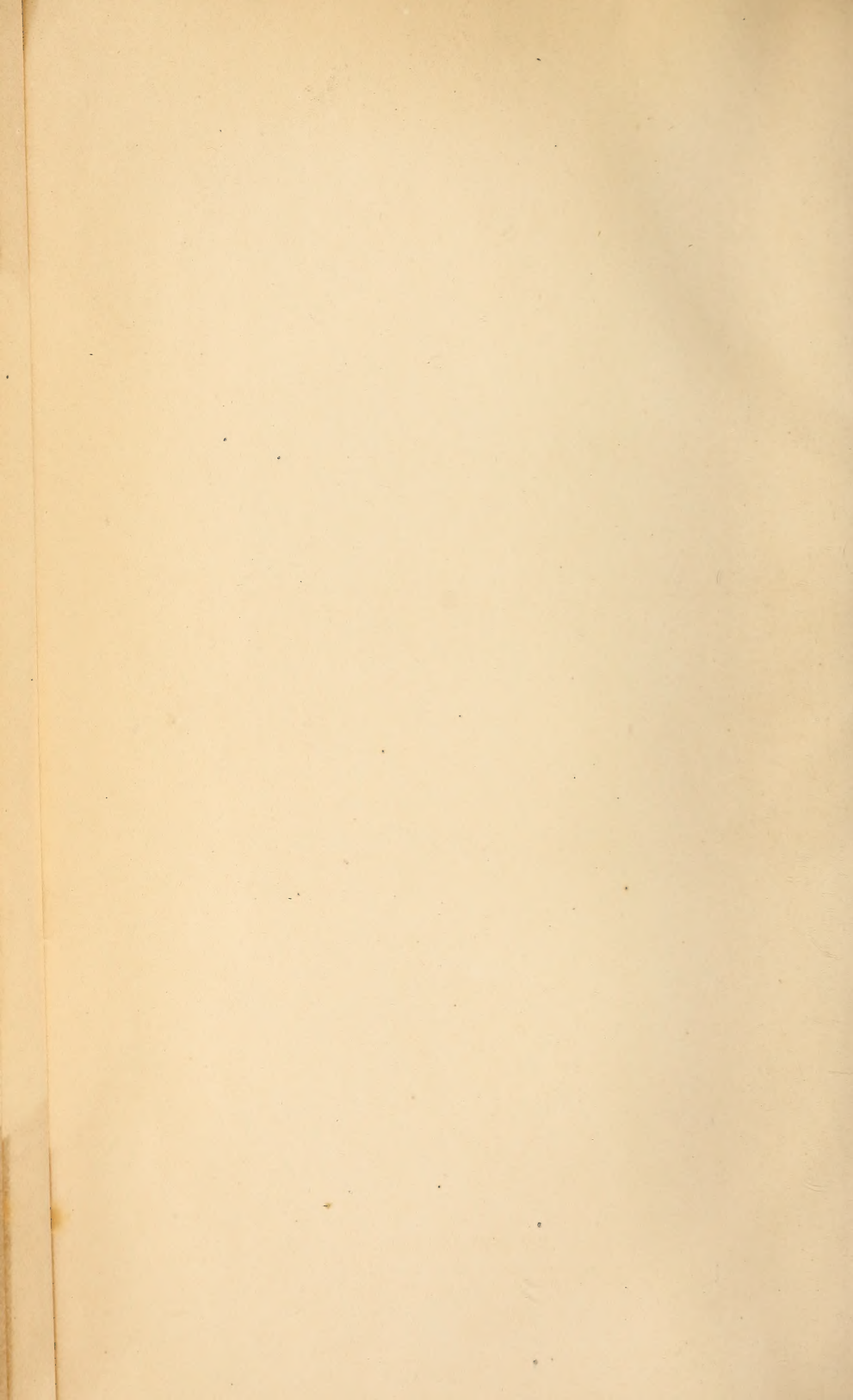




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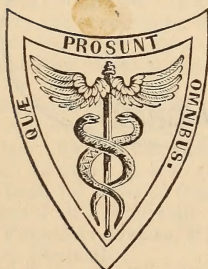
THE
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OF THE
MEDICAL SCIENCES.

EDITED BY
ISAAC HAYS, M.D.,
FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA; MEMBER OF
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA; AND OF THE AMERICAN
PHILOSOPHICAL SOCIETY; ASSOCIATE FELLOW OF THE AMERICAN
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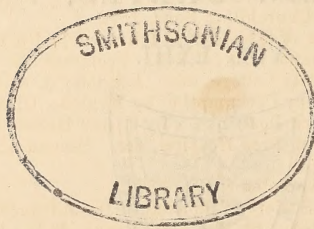
NEW SERIES.

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TO READERS AND CORRESPONDENTS.

All articles intended for the *Original Department* of this Journal must be contributed to it *exclusively*. The insertion elsewhere of *abstracts* of papers *prior* to the publication of the entire paper in this Journal is a violation of this rule. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, are requested to forward them before the 1st of February.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies will be furnished to authors, *provided the request for them be made at the time the communication is sent to the Editors*.

The following works have been received :—

Notizen und Erinnerungen eines Ambulanz-Chirurgen. Von WILLIAM MACCORMAC, Wundarzt am St. Thomas-Hospitale in London. Aus dem Englischen übersetzt und mit Bemerkungen versehen von Dr. LOUIS STROMEYER, Verfasser der Maximen der Kriegsheilkunst. Mit 7 Heliotypen und 10 Holzschnitten. Hannover: Hahn'sche Hofbuchhandlung, 1871.

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Fistula, Hæmorrhoids, Painful Ulcer, Stricture, Prolapsus, and other Diseases of the Rectum, their Diagnosis and Treatment. By WILLIAM ALLINGHAM, F.R.C.S. Eng., Surgeon to St. Mark's Hosp. for Fistula, etc. London: J. & A. Churchill, 1871.

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On the Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine, and its Connections with Modern Doctrines. By JAMES HENRY BENNET, M.D., late Obstetric Physician to the Royal Free Hospital, etc. Second edition. London: J. & A. Churchill, 1871.

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On Clinical Education. By FURNEAUX JORDAN, F.R.C.S., Surgeon to the Queen's Hospital, etc. London: J. & A. Churchill.

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Essentials of the Principles and Practice of Medicine; a Handbook for Students and Practitioners. By HENRY HARTSHORNE, A.M., M.D., Professor of Hygiene in the University of Pennsylvania. Third edition, thoroughly revised. Philadelphia: Henry C. Lea, 1871.

A Treatise on Human Physiology; designed for the Use of Students and Practitioners of Medicine. By JOHN C. DALTON, M.D., Professor of Physiology and Hygiene in the College of Physicians and Surgeons, New York, etc. Fifth edition, revised and enlarged; with two hundred and eighty-four illustrations. Philadelphia: Henry C. Lea, 1871.

An Introduction to Pathology and Morbid Anatomy. By T. HENRY GREEN, M.D. Lond., Lecturer on Pathology and Morbid Anatomy at Charing Cross Hospital Medical School, and Senior Assistant Physician to Charing Cross Hospital. Illustrated by numerous engravings on wood. Philadelphia: Henry C. Lea, 1871.

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Practical Therapeutics; considered chiefly with reference to Articles of the Materia Medica. By EDWARD JOHN WARING, M.D., F.L.S., Surgeon (Retired) in Her Majesty's Indian Army. Second American from the third London edition. Philadelphia: Lindsay & Blakiston, 1871.

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Fecundity, Fertility, Sterility, and allied Topics. By J. MATTHEWS DUNCAN, A.M., M.D., Lecturer on Midwifery in the School of Medicine, etc. etc. Second edition, revised and enlarged. New York: William Wood & Co., 1871.

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A New Ovariectomy Clamp. By B. F. DAWSON, M.D., of New York.

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Clinical Examination of Urine; with a Description of a convenient Apparatus for its speedy Analysis. By REUBEN A. VANCE, M.D. New York, 1871.

A Contribution to the Treatment of Versions and Flexions of the Unimpregnated Uterus. By EPHRAIM CUTTER, A.M., M.D. Boston: James Campbell, 1871.

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The Prevention of Abscesses in Hypodermic Medication; with a Description of an Instrument for the Injection of Strychnia. By REUBEN A. VANCE, M.D. New York: Wm. Baldwin & Co., 1871.

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Centralblatt für die Medicinischen Wissenschaften, 1871. Nos. 37 to 50, 1871.

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Giornale Italiano delle Malattie Veneree. Agosto, Settembre, Ottobre, 1871.

L'Imparziale. 1871, Nos. 18, 19, 20, 21, 22.

O Correio Medico de Lisboa. 1871, Nos. 6, 7, 8, 9, 10, 11.

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Annales de Dermatologie et de Syphiligraphie. No. 6, 1871.

Revue de Thérapeutique Médico-Chirurgicale. Nos. 31, 32, 33, 34, 35, 1871.

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L'Union Médicale. Nos. 66 to 86, and 90 to 103, 1871.

Le Mouvement Médical. Nos. 6, 7, 10, 12, 13, 14, 15, 16, 17, 18, 1871.

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 The Practitioner. October, November, December, 1871.
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 The Glasgow Medical Journal, November, 1871.
 The Royal London Ophthalmic Hospital Reports. 1871. Vol. VII., Part 2.
 The Indian Medical Gazette. September, October, November, 1871.
 Canada Medical Journal. October, November, 1871.
 The Canada Lancet. August, September, October, November, December, 1871.
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 New Remedies. October, 1871.
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 The Saint Louis Medical and Surgical Journal. November, 1871.
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 The Richmond and Louisville Medical Journal. November, December, 1871.
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 The American Journal of Science and Arts. October, November, December, 1871.
 The American Naturalist. September, October, November, December, 1871.
 The Boston Journal of Chemistry. October, November, 1871.

Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M.D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, *London*; or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay.

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AMERICAN JOURNAL OF THE MEDICAL SCIENCES

FOR JANUARY 1872.

ART. I.—*Observations on the Frequency and Symptoms of Rachitis, with the Results of the Author's Clinical Experience.* By JOHN S. PARRY, M.D., Attending Accoucheur to the Philadelphia Hospital, etc.

THE medical literature of this country is singularly deficient in regard to this disease. Our leading medical journals contain few original articles upon the subject, and it is often passed without notice in the systematic works on the practice of medicine and the diseases of children; while the frequency of the disease, the grave deformities which it produces, and its indirect termination in death in numerous instances, make it a subject of great interest and importance.

Frequency.—The opinion is very prevalent in this country that this is a disease of the Old World, where it is exceedingly common.

Ritter Von Rittershain states¹ that thirty-one per cent. of all the children under five years of age applying for relief at the Medical Poliklinik, of Prague, are rachitic. Gee found² that thirty and three-tenths per cent. of all under two years of age admitted to the Hospital for Sick Children, in London, were rickety. Merei had before this asserted³ that one out of five, or about twenty per cent., of the children in the upper classes, and under his care, in Manchester, were rachitic, and he adds that this "cannot be much above the real rate when applied to the whole of the wealthy classes." Dr. C. C. Ritchie,⁴ of Manchester, states that out of 728 children under five years old, and coming under his care at the Hulme Dispensary, 219, or about thirty per cent. of them, were affected with this disease. Prof. Henoch,⁵ of Berlin, confirms the estimate of Ritter as his own ex-

¹ West, *Diseases of Children*, Phila., 1868, p. 588.

² St. Bartholomew's Hospital Reports, vol. iv. p. 70.

³ *Disorders of Infantile Development*, &c., 8vo., London, 1855.

⁴ *Medical Times and Gaz.*, Jan. 7, 1871.

⁵ Quoted by West.

perience in that city. These are all the positive figures which we possess upon this subject. Though not so definite, other opinions are almost equally strong. Sir Wm. Jenner,¹ after enumerating the four diatheses of childhood, the strumous, the tubercular, the rachitic, and the syphilitic, says that the third, or the rachitic, is the most frequent, the most fatal, and, therefore, the most important. Hillier states² that the disease is a frequent cause of death, though it has no place in the reports of the Registrar-General; a remark which applies equally well to London or Philadelphia, to England or America.

Meanwhile, if we turn to the statements of the few American authors who have written upon this subject, we find that they by no means agree with those just quoted. Condie,³ who describes it under the name of "Scrofulous Disease of the Bones," even as late as 1868, says that the affection "is fortunately one of comparatively rare occurrence." Bauer bears the same testimony. He writes that⁴ this "is one of the rarest maladies on the Western Continent." Meigs and Pepper⁵ "cannot avoid the conclusion that rickets must be a vastly more common affection among the poorer classes in London than among the same classes in our large American cities." The writer has already publicly expressed⁶ it as his opinion that the frequency of this disease is much underestimated in this country. In the children's departments of the Philadelphia Hospital, at least twenty-eight per cent. of all the sick children between one month and five years old, that have come under his observation during the last three years, have been rachitic. This estimate is rather under than beyond the truth.

Nor is the affection confined to children who are inmates of hospitals, as any one who has had any experience in the diseases of the poorer classes can testify. Moreover, it is not among the poor alone that we meet with it, notwithstanding Meigs and Pepper cannot corroborate⁷ the experience of Jenner, who has "very often seen it among the children of the wealthy."

I have repeatedly met with typical examples of the affection among children whose parents were able to provide them with every luxury, and more, like Jenner, I have seen fully-developed rickets, which had gone on to the production of deformity, among children well cared for and living in the country. The only means by which these statements of American authors upon practical medicine and the diseases of children can be accounted

¹ Med. Times and Gaz., 1860.

² Dis. of Children, 8vo., Phila., 1868, p. 92.

³ Dis. of Children, 6th ed., 1868, p. 645.

⁴ Lectures on Orthopædic Surgery, 8vo., New York, 1868, p. 213.

⁵ Diseases of Children, 8vo., Phila., 1870, p. 633.

⁶ Proc. Pathological Soc. of Phila. Amer. Journ. Med. Sci., April, 1871.

⁷ Op. cit., p. 663.

for, is by concluding that, while they recognize the grave forms of the disease, they fail to appreciate the very characteristic symptoms of the early stages of the affection. The writer having had his attention drawn to this subject several years ago, has been irresistibly forced to the conclusion that rachitis is scarcely less frequent in Philadelphia than it is in the large cities of Great Britain and the Continent of Europe, and that it should occupy just as important a place in our mortuary lists as Hillier conceives that it should in those of the Registrar-General of England.

If this opinion be correct, it is exceedingly important that it should be generally recognized, and correct therapeutical principles promulgated, as permanent and dangerous deformities can almost always be prevented by the proper remedial and hygienic means.

Age.—This is essentially a disease of childhood, and even of infancy. Whistler, who originally described it in 1645, styled it *morbus puerilis*. Boerhaave's 1487th Aphorism¹ is: "It is never born with the children, comes on seldom before they are nine months old, scarce ever after they are two years old, but most commonly between those two ages." Cullen,² Hoffman,³ Underwood,⁴ Brooks,⁵ Thomas,⁶ and Gregory⁷ almost reiterate this statement. Astruc⁸ thought it not unfrequently commenced in the third year, and sometimes as late as the fifth.

There is much truth in the aphorism of Boerhaave, and he and his immediate followers were much nearer correct than those who succeeded them. Indeed, even among recent writers there are the most diverse statements in regard to the age at which rachitis sets in.

It is probably true that the disease is rarely congenital, but to say that "it is never born with the children," I think, we will all have to admit, is going too far.

In 1868, Gee, of London, asserted⁹ that the specimens of the only case in which there was a perfect and uncontradictory history of congenital rachitis were in the Kinderspital Museum at Prague. The case is related by Ritter, and the specimens figured in his book.¹⁰ Various other German authors have reported rare cases of congenital rickets. Among these is one by Winkler,¹¹ the drawings of which indicate that there was

¹ Aphorisms, 8vo., London, 1742, p. 440.

² First Lines in Pract. of Physic, 8vo., Edinburgh, 1740, p. 339.

³ Pract. of Med., 8vo., London, 1783, p. 513.

⁴ Diseases of Children, 4th ed., London, 1799, vol. i. p. 340.

⁵ Pract. of Physic, 8vo., London, 1777, p. 305

⁶ Pract. of Physic, 8vo., New York, 1815, p. 482.

⁷ Theory and Pract. of Physic, 8vo., Phila., 1829, vol. ii. p. 480.

⁸ Diseases of Children, London, 1746, p. 213.

⁹ St. Bartholomew's Hosp. Reports, vol. iv. p. 70.

¹⁰ Die Pathologie und Therapie der Rachitis, Berlin, 1863.

¹¹ Arch. für Gynækol., Berlin, 1871.

much distortion of the long bones. Hink¹ reports an extreme case of congenital craniotabes, with deformity of the hollow bones. Bednar² believes the congenital disease to be of common occurrence; and Virchow³ speaks of cases of the kind. Accepting the doctrine that craniotabes is one of the phenomena of the affection, reference must be made to a notable example recorded by Jacobi, of New York,⁴ in which small portions of the frontal and parietal bones contained between twenty-five and thirty openings. The writer has never succeeded in discovering unequivocal evidences of congenital rachitis, though he has examined the bodies of a considerable number of children who were stillborn, or died within a few days after birth. Congenital craniotabes he has never seen. In two instances slight enlargement of the sternal extremities of the ribs was believed to exist, though there was some doubt in regard to the matter; but in view of recorded facts, we have to conclude that rachitis is sometimes, though rarely, congenital, and that it may result in considerable deformity even before birth.

Most of the early writers upon rickets greatly underestimated the frequency of the disease during the early months of life, probably owing to the influence of Boerhaave's teaching. So far as we know, Moss was the only physician of the last century who approached the truth in this matter. He says⁵ that it may begin as early as the fourth month. Guérin, who has been largely quoted, fixed a late period.⁶ Of 346 cases observed by him, 209 became affected before the commencement of the fourth year. Of the 209, the disease began in 178 during the second, and in 98 during the first year. Elsässer⁷ seems to have been among the first to assign an early period, for, in a majority of the cases treated by him, the disease began within the first six months after birth. Beylard was of the opinion⁸ that in most cases the affection began towards the close of the first year, or during the first half of the second year, after which, he says, the number of cases rapidly diminishes until puberty. An opinion scarcely different from this is promulgated by Meigs and Pepper, as late as 1870, in the following language:⁹ "During the first four or five months of life * * the disease is very rare, while in the great majority of cases it makes its appearance between the fifth month and the end of the second year, after

¹ Wien. Aertz. Zeitsch., ii. 7.

² Krankheiten der Neugeborenen und Säuglinge. Quoted by Hillier.

³ Hillier Dis. of Children, p. 97.

⁴ Amer. Journ. of Obstetrics, Nov. 1870, p. 445.

⁵ On Diseases of Children, 8vo., England, 1794, p. 266.

⁶ Mémoire sur le Rachitis, Paris, 1839.

⁷ Der Weiche Hinterkopf, Stuttgart, 1843; and Brit. and For. Med.-Chir. Rev., vol. xvii., 1844.

⁸ Du Rachitis, &c., 4to., Paris, 1852, p. 30.

⁹ Dis. of Children, 8vo., Phila., 1870, pp. 634, 635.

which it becomes annually less and less frequent, and may be said to rarely arise after the close of the seventh year."

This subject would not occupy us so long, if these, the most recent and able American authors upon diseases of children, had not advocated a doctrine which is even behind that of Boerhaave.

Rickets is not by any means rare during the early months of extra-uterine life. The writer has met with unequivocal beading of the ribs at six weeks after birth. Gee has noticed it at the third and fourth week.¹ Cases of the disease in the early part of the third and during the fourth month are by no means uncommon. On the other hand, we believe that Vogel is entirely correct in saying² that "after the completion of the first dentition it never comes on in a child hitherto perfectly healthy," an opinion with which Dr. Gee agrees.³ This makes its latest possible appearance to be the end of the third year, for Vogel fixes⁴ this as the period when the first dentition is concluded. The error in the time assigned for the latest appearance of rickets has arisen from two causes. The first is, that many observers have failed to distinguish the latent from the progressive form of the disease. There are some children in whom the disease is more or less perfectly developed during the first few months after birth, but in whom it does not progress actively until a later period, when it suddenly takes on a tendency to increase. Gee further says that he has never met with a case in which the affection set in "*de novo* later than at twenty months."⁵ The writer would, if possible, limit its commencement still further, and assert with Ritter⁶ that it is rare for it to begin after the end of the first year. He has seldom met with it in a child in whom no symptoms of the affection presented themselves before this time.

The second source of error is, that many have failed to discriminate between rachitis and mollities ossium. Among these are Bromfeild,⁷ Stanley,⁸ Beylard,⁹ and Stewart.¹⁰ It is true that these diseases resemble one another very closely, and that even in some important particulars they present identical symptoms. In others they are totally unlike, and between them there is this very important distinction, that rachitis is probably more than any other a disease of childhood, and even of infancy, while mollities ossium is an affection of adult life.

In limiting the period for the commencement of the affection, reference is made chiefly to the first unequivocal physical alteration of the disorder,

¹ St. Bartholomew's Hospital Reports, vol. iv. p. 71.

² Diseases of Children, 8vo., New York, 1870, p. 528.

³ Op. cit., p. 71.

⁴ Op. cit., p. 13.

⁵ Op. cit., p. 71.

⁶ Die Pathologie, &c., p. 54.

⁷ Chirurgical Observations and Cases, 8vo., London, 1773, vol. ii.

⁸ Diseases of the Bones, 8vo., London, 1849, p. 218.

⁹ Du Rachitis, 4to., Paris, 1852.

¹⁰ Diseases of Children, 8vo., New York, 1841, p. 318.

the beading of the ribs. In a few rare cases, as is asserted by Elsässer and Holmes Coote, craniotabes or enlargement of the lower extremity of the radius may precede the thoracic changes, but these exceptions are so rarely met with that for practical purposes the chest is the part which is to be examined first in all cases of suspected rickets. If no changes be discovered in these, it is well enough to examine the occipital region and the wrists before concluding that the peculiar bony alterations of the disease have not commenced.

Symptoms.—The symptoms of rachitis are usually well marked, but they vary much with the stage of the disease. As in pulmonary and cardiac affections, they may be divided into the rational and physical signs. M. Guersant and other writers have separated them into three divisions, those of, 1. Incubation; 2. Deformation; 3. Recovery. It matters little which plan is adopted in the description of the disease, and the latter will be followed, as it is simple, and will enable us to readily appreciate the order in which the phenomena appear and succeed one another.

There are certain characteristic symptoms which precede the bone changes, and which have been neglected until a comparatively recent period. Among these, various observers, in support of their etiological theories, have described certain digestive derangements; and many infants about to become the subjects of rickets present more or less evidence of impaired digestion, as loss of appetite, occasional vomiting, and disturbed bowels, which may be constipated or loose, or the two conditions may alternate. If there be diarrhœa, the stools are mucous, green, often frothy, and acid in reaction.

These disturbances of digestion, however, are not invariable precursors or prodromes of rachitis, for we not rarely meet with the minor yet indubitable forms of the disease in children who are supposed to be perfectly well, and who, pale though plump, present few evidences of ill health. And, on the other hand, every one knows that the most serious digestive disorders may progress for a long time, and even prove fatal, without the occurrence of any of the characteristic changes of this disease.

Be this as it may, however, there is a series of symptoms which have been described by most recent writers upon this affection, and which nearly always present themselves before any changes occur in the bones. These are sufficiently striking, and should always lead the physician to suspect the presence of this cachexia; nay, more, they are so characteristic of the affection which we are discussing, that it at once becomes the duty of the medical attendant to place the patient upon treatment for rickets.

The symptoms to which allusion is made are profuse perspiration, with general heat of the surface, at night.

1. The perspirations are local, and are chiefly confined to the head, the neck, and the upper portions of the chest and back. These parts are often cool and wet, while the rest of the body is dry and hot. This sweating

occurs chiefly when the child is asleep, but in severe cases, when awake, after any emotional or other excitement, or even the slightest exercise. It is often very profuse, and in a short time after the infant has fallen asleep his pillow will be found wet, even for some distance beyond the part with which his head was in contact, while the remainder of his bedding and clothing remain dry. If the perspiration upon the forehead and face be wiped away, it reappears almost instantly, standing upon the surface in large, clear, pearly drops, which seem to spring up suddenly, and at once form some reservoir immediately beneath the skin. Associated with this sweating, there is often a copious crop of miliary vesicles upon the surface.

2. With the account of this local sweating, the mother will very often volunteer the information that her child is very hot at night, and that it is only with the greatest care that she is enabled to keep him covered. Sometimes this is so marked, that scarcely any device will enable her to effect her purpose. This restlessness and disposition to kick the clothes off not only manifest themselves during warm, but likewise in the coldest weather, so that in midwinter the little patient may often be found lying with his bare extremities and uncovered body upon the top of the bed-clothing.

These symptoms are very constantly present, though in rare cases they may be absent, or so imperfectly developed as to attract but little attention. Infants sometimes suffer in this way for a considerable time without their mothers thinking that the symptoms indicate the commencement of any grave cachexia, and hence the disease has often passed beyond this, and bone changes set in before the little patient is submitted to treatment.

The value of these symptoms has already been dwelt upon. The first, or local sweating, is probably of greater importance than the restlessness with disposition to throw off the covers at night. It is sometimes present without the second, and the discovery that a patient between birth and eighteen months old is disposed to sweat copiously about the head and neck when asleep, or after slight exercise or emotional disturbance, is sufficient to make an intelligent physician strongly suspect that rachitis is commencing. Indeed, there are few appearances more striking than that presented by these children, and the wet pillow with the dry bed-covers may oftentimes afford an explanation for the languor and pallor which had before been unaccountable.

Some writers upon this subject speak of general tenderness of the surface as being associated with the two symptoms which have been described. Among these is Jenner,¹ to whom the profession is indebted for a complete and characteristic description of the first stages of the affection. Meigs and Pepper,² and Niemeyer,³ even speak of general tenderness of the surface

¹ Medical Times and Gazette, 1860.

² Diseases of Children, 8vo., Philadelphia, p. 635.

³ Practice of Medicine, 8vo., New York, 1869, vol. ii. p. 511.

as immediately following the yeasty diarrhœa, and preceding the profuse perspirations and heat of surface, with restlessness, which have been described.

This symptom, when it does occur, is very striking, for the child is so tender that it is indisposed to make the least exertion. He seems to desire nothing so much as to be let alone, and the infant who had previously expressed only delight at the approach of his mother or nurse, will now manifest nothing but fear and aversion. The most careful handling causes him pain. Valuable as this symptom may be when it is present, we cannot believe that it is by any means constant in its occurrence, and of the three important phenomena described, it is the one which is most apt to be wanting. Moreover, while, as in Jenner's description, the sweating and restlessness may be prolonged until this tenderness of surface supervenes, the latter is a symptom of the second stage rather than of the first, and Niemeyer, and Meigs and Pepper, are far from correct when they say that this is the phenomenon which immediately succeeds the digestive derangements to which we have before alluded. We believe the truth is, that this general tenderness is associated with the bone changes, and is among the initial symptoms of Guersant's second stage, that of "Deformation."¹ According to Vogel,² it is "the first symptom of rachitis of the ribs."

Associated with these are other symptoms, of minor importance. The veins of the head and scalp are often much enlarged, and very prominent beneath the pallid skin. Jacobi³ believes that this general hyperæmia of the cranium and scalp accounts for the profuse perspirations which have been described. Enlargement of the vessels of the head attracted the attention of some of the earliest writers upon this subject, for Glisson asserted⁴ that, while the vessels supplying the other parts engaged in the rachitic process are smaller than in health, the carotid arteries and jugular veins are disproportionately large.

Meanwhile the little patient suffers from heat of the head, rolls it from side to side, while the occiput becomes bald, probably, from constant motion. The child grows pale, and it may emaciate rapidly, or in other cases there is little or no loss of flesh, and the patient may present the outward evidences of fair health. Mothers and friends often point to these pale, rather fleshy children, as perfect types of infant beauty. The debility continues, the appetite is poor, food taken is digested with difficulty, and the diarrhœa or constipation continues, or the two alternate. Constipation is not by any means uncommon. Jacobi speaks⁵ of it as among the first symptoms, and attributes it to "the neglected development of the muscular tissue of the intestinal tract." In some cases it is very obstinate. In

¹ Smith, *Wasting Diseases of Children*, 8vo., Philadelphia, 1870, p. 76.

² *Diseases of Children*, 8vo., New York, 1870, p. 528.

³ *Amer. Journal of Obstetrics*, Nov. 1870, p. 447.

⁴ *Treatise on Rachitis*, London, 1668, p. 16.

⁵ *Op. cit.*, p. 441.

an infant recently under my care, it set in at the end of the first month. At three months the ribs were beaded, at five she had craniotabes and laryngismus stridulus, and at the end of a year the constipation had disappeared under the treatment for rachitis; but during that time the bowels were never opened spontaneously, and only after taking enormous doses of purgative medicines, or the repeated use of large enemata.

These symptoms, which are the prodromes of fully-developed rachitis, are by no means limited to the stage of invasion, but are prolonged into, or may even become more severe during the second stage, or that of bone lesion. Their duration before the occurrence of osseous changes varies considerably. The period may be very short, and the initial physical signs may appear almost simultaneously with the local perspirations and heat of surface at night. In other cases the perfectly characteristic alterations of the disease may be delayed for several months after the appearance of these symptoms.

The first of the bone lesions, or the earliest evidence of Guersant's second stage, or that of "deformation," is enlargement of the extremities of the ribs at their attachments with their costal cartilages. This bulbous condition of these bones is similar in its nature to the "double-joint" appearance so commonly met with in the extremities.

After the disease has progressed for a little time, and the child has become more or less emaciated, this beading of the ribs may be plainly visible on inspection, while in other instances it is hardly perceptible even to the educated touch. The latter condition does not prove, however, that considerable enlargement of these parts may not have occurred upon the intra-thoracic surface of the articulation. The writer has seen at autopsies marked bulbous enlargement of the inner surface of the extremities of the ribs, when little was to be felt upon the exterior. Vogel mentions¹ the same fact, and it seems not unreasonable to suppose that the intra-thoracic surface is often the starting-point of the local lesion, and that this may be progressing in many cases during the so-called stage of invasion. In order to detect the very earliest local manifestation of the disease, the lower left side of the chest should be carefully examined, and I am inclined to believe that the articulations of the fourth, fifth, and sixth ribs will often be found enlarged, whilst the others remain unaffected. The cause of this is probably the greater prominence of this part of the chest-walls, owing to the presence of the heart on the left side.

Coincident with these changes in the ribs, or in some cases, before they occur, craniotabes may be detected. Eslässer says that this is sometimes the first bony alteration of the disease; an assertion which the writer has confirmed in a few rare cases, but he cannot by any means agree with Vo-

¹ Diseases of Children, 8vo., New York, 1870, p. 528.

gel, who says that rachitis of the thorax "*usually comes on somewhat later than softening of the occiput.*"¹

On the other hand, Syme² and Coote³ inform us that the first physical sign is enlargement of the extremities of the ulna and radius; an observation which I have been able to confirm in but one instance out of a large number of observations. Coote is undoubtedly propagating an error, when he writes that, "of all parts of the body, the wrist, *i. e.*, the distal end of the radius, gives the earliest and most constant indications of the disease;"⁴ while the truth is, this part is involved after the ribs and the occiput, and especially after the former. There are lying before me at this moment the notes of many cases which have been under my care at the Philadelphia Hospital and in private practice, in which there was bulbous enlargement of the extremities of the ribs, and not only this, but also very considerable thoracic deformity, without any change in the extremity of the radius. The order in which these parts are attacked is as follows: First, the extremities of the ribs; secondly, the occipital bone; thirdly, the bones of the wrist. The latter I have often seen enlarged when I could not detect craniotabes, but only in one instance, as already stated, without the ribs being involved. Epiphyseal swelling of the radius we think will be met with more frequently than craniotabes, in a given number of cases of rickets, but it is not so often the primary bone lesion of the disease. While this change may occur almost simultaneously with beading of the ribs and perforation of the occiput, we have repeatedly seen it postponed until after there was considerable bending of the bones of the lower extremity.

The enlargement of the extremities of the long bones does not necessarily commence in the wrist. Thomas Brayne, Esq., furnishes⁵ the history of one of the most remarkable cases of rachitis upon record. The boy was well at birth, in two weeks was fretful, and in three had diarrhoea and enlargement of the right elbow.

If the disease continues to progress, the osseous system becomes very generally involved. The wrists may become very large. I have repeatedly seen them two or three times their natural size, and in Brayne's case just quoted they were much larger than this. When the disease is fully developed, the ends of any of the long bones may be similarly affected. My friend Dr. W. G. Porter, of this city, recently asked me to see a little patient, a year and a half old, suffering from extreme rachitis, in whom not only the head and chest were involved, but the ends of all the long bones were enlarged. This was particularly well marked at the knee and ankle

¹ Dis. of Children, p. 527.

² Prin. of Surgery, 8vo., London, 1859, p. 203.

³ St. Bartholomew's Hosp. Reports, vol. v., 1869.

⁴ Ibid., p. 127.

⁵ Trans. Provincial Med. Assoc., vol. iii., 1834, p. 365.

joints. The circumference of the knees of Brayne's patient was enormously increased, the right measuring nineteen, and the left one fifteen inches, while the circumference of the head was only twenty inches. In this singular case the knees were affected to a much greater extent than any other portion of the osseous system, and it is distinctly stated that the patella was involved in the enlargement.

Lonsdale asserts¹ that rachitic swelling of the malleolar extremity of the tibia is always associated with the same condition of the carpal end of the radius. This may be, but the converse of the proposition is by no means true. Any one who has carefully studied many cases of this disease, must have been convinced that bulbous enlargement of the ends of the long bones of the lower extremities is much less frequent than the same condition of the ribs and the bones of the arms. This opinion, and some which have preceded it, are in opposition to the views of Guérin,² who maintains that the disease first attacks the lower, and then ascends to the upper portions of the body. Able writers have asserted, and among them Stanley,³ that only those joints which possess "a thin covering of soft parts, such as the wrist, elbow, knee, and ankle," are involved in rickety expansion. This is true of most cases of the disease, but in some, in whom the cachexia is highly developed, any ends of any of the bones may become swollen, but in those which are situated deeply, as the shoulder and hip, the enlargement is much obscured by the superimposed muscles. Jenner has seen the upper ends of the femur and humerus as thoroughly involved as the lower ends of the bones of the forearm, and he even goes so far as to say⁴ that these parts suffer as much as the more exposed extremities of the long bones. My attention was not directed to this point until recently. I had accepted as true a previously formed opinion that the deeper are less frequently affected than the superficial joints. A limited experience has apparently confirmed this belief. I have found at post-mortem examinations that one or several of the superficial joints may be affected, while the upper portions of the femora and humeri remain untouched.

Some authorities have asserted that this increase in the size of the epiphyses of the bones is only apparent, and not real. This statement has been disproved by Jenner's measurements. He found the circumference of the wrist in a child aged three years, and suffering from tuberculosis, to be $3\frac{3}{8}$ inches, while that of another of the same age, with rickets, was $4\frac{1}{2}$ inches—a difference of an inch and an eighth in favor of the latter.

In addition to the one just described, there is another and a very important alteration in the development of the long bones. While there is

¹ *Lancet* (Amer. reprint), 1855, part ii. p. 361.

² *Mém. sur le Rachitis*. Paris.

³ *Dis. of the Bones*, 8vo., London, 1849, p. 219.

⁴ *Med. Times and Gazette*, March 17, 1860, p. 261.

enlargement, both apparent and real, of the epiphyses, both the length and circumference of the shaft are less than normal. Mr. Alexander Shaw, of London, in his able papers upon the conformation of the rickety skeleton,¹ has shown that the upper extremity, from the acromion to the tip of the middle finger, is two and a half inches shorter than the average of normal skeletons, while the distance from the trochanter to the heel, following the curves of the distorted limbs, is even ten and a half inches less than the average in healthy persons. It is important to remember that this undeveloped condition of the bones has no connection with their twisting or curvature which is about to be described. A rachitic individual does not derive his stunted appearance entirely from the deformities of which he is the subject, but if his limbs could be straightened and have their natural shape imparted to them, he would still, if the disease had been fully developed in his infancy, be nearly a foot below the average height. The importance of this fact will become obvious when we come to study the influence of rickets upon the pelvis; for what is true of the arms and legs will be found to hold good when applied to almost all the bones of the trunk and head, excepting those of the cranium proper. Indeed, the influence of the disease may be so great as to reverse the normal proportions of the frame.

The author has recently examined a young girl seventeen years old, the subject of most remarkable rachitic deformity. Excepting that they are short, the upper extremities are well formed—that is, there is no twisting or bending of the bones—but the humeri are shorter than the bones of the forearm. Guérin gives² the normal length of the radius as 8 in. 4', of the ulna as 9 in. 3', and of the humerus as 10 in. 4'. Humphry, who has met with several similar examples, says³ that there is the skeleton of a rickety female in the museum of St. Bartholomew's Hospital, in which the tibiæ are longer than the femora. And not only is this the case, but the same authority tells us that one limb may be thus affected, as is the case in another skeleton in the same museum. In this one the right femur is twelve inches long, while the left one measures only nine and a half inches. In Dupuytren's museum there are five such skeletons from rachitic persons, in which one femur is from one to three inches longer than the other.⁴

Notwithstanding what has been said in regard to the earliest physical changes of the bones being met with in the thorax, head, and arms, it is obvious, from the researches of Mr. Shaw⁵ and M. Guérin,⁶ that the

¹ Trans. Medico-Chirurg. Soc., London, vol. xvii. p. 471.

² Lancet, April, 1848, p. 388.

³ The Human Skeleton, 8vo., London, 1848, pp. 53 and 100, and Medico-Chirurg. Soc. Trans., vol. xlv. p. 308.

⁴ Humphry, p. 83, and Atlas of Museum of Dupuytren, pl. xx. and xxi.

⁵ Trans. Medico-Chirurg. Soc., 8vo., London, vol. xvii. p. 471.

⁶ Lancet, 1848. Quoted by Lonsdale.

arrest of growth affects the lower to a greater degree than it does the upper extremities, but according to the former the disproportion is much greater than according to the latter. Mr. Shaw, as already stated, says that the upper is about two and a half inches, and the lower extremity ten and a half inches, shorter in the rachitic than it is in a healthy person of average size. Guérin, on the other hand, says that the arm is three and a half, and the leg seven and a half, inches shorter than natural. In other words, both of these authorities agree to the fact that in rickety individuals the head, thorax, and arms preponderate over the lower extremities and trunk—precisely the opposite of what obtains in healthy and normally developed persons—and that this is true even when the deformities of the disease are excluded from consideration.

These are the alterations in the development of the upper and lower extremities. In addition to them, we have to describe the deformities which are the result of the softening and imperfect ossification of the bones, and which, according to Willshire,¹ are always preceded by the arrest of development. Any or all of the bones of either extremity may be bent or twisted. The cause of these deformities has been variously stated to be muscular action, or the weight of the pendent limb or the superimposed body. Mr. Edward Stanley² advocates the former opinion; Jenner³ and Aitken⁴ the latter; while Lonsdale,⁵ with Meigs and Pepper,⁶ attributes the incurvations to the combined agencies of muscular action, gravity, and the weight of the body. It is probable that the muscles have but little to do with the production of these deformities. They have their influence in supporting the softened and non-resisting bones, but the study of any case of progressing rachitic distortion will, we believe, convince the careful observer that in all but very exceptional instances the bones of the extremities are bent by the weight of the dependent limbs or by that of the superimposed trunk. The direction of the curves, the increase of those normally present, without reference to the origin and insertion of the powerful muscles of the part and the absence of any absolutely fixed law which governs their production, must convince any one that they are the results of pressure and gravity, rather than of any constant force always operating in a certain and definite direction. Indeed, to understand these twists and curves of the long bones, the physician must study the habits of the child, when he will often find that some unusual and hitherto unaccountable deformity is but the necessary result of a vicious habit of the patient, which induces him to occupy a peculiar position, whether standing, sitting, or lying.

¹ Brit. and For. Medico-Chir. Rev., July, 1856.

² Trans. Medico-Chir. Soc., London, vol. vii. p. 404.

³ Med. Times and Gaz., vol. i. for 1860.

⁴ Reynolds's Syst. of Med., 1860, vol. i. p. 777.

⁵ Lancet, 1855.

⁶ Dis. of Children, Phila., 1870, p. 637.

For other and most obvious reasons, this view appears to be correct. In no other disease to which children are liable, excepting absolute paralysis, is the muscular power so much diminished, and, owing to the general tenderness from which they often suffer in this stage of the affection, they are indisposed to exert what they retain, but, lying perfectly still, they are the best of children. In these cases it is not uncommon to find children who had been walking cease making any effort of this kind, and even to become the subjects of "pseudoparaplegia." In no other disease excepting paralysis, it has been said, is the muscular power more interfered with than in this. In scrofula, tuberculosis, and the other cachectic disorders, children may continue to walk with considerable energy even until near the close of life, and when the emaciation and the atrophy of the muscles are far greater than they are in the disease which we are discussing. Moreover, we do not find deformity occurring in any part which is not subjected to pressure or does not have to bear some weight; and those children who have suffered severely without change in the direction of the bones, and who, from improvement in muscular power and partial hardening of the bones, begin to walk late, or resume it after having ceased, first present deformity after subjecting their limbs to pressure.

The direction of the distortions of the extremities, and especially of the lower, is to a certain degree modified by the condition of the articular ligaments. Shortly after the disease sets in these become relaxed, and permit increased movement of the joints, and this may determine the direction of the curvature inward or outward. This relaxation is peculiarly apt to affect the knee and ankle joints of children who are still able to stand or walk.

The lower is more frequently deformed than the upper extremity, though the bones of the arm are sometimes involved while those of the leg and thigh continue perfectly normal. The humerus may be bent in two directions. It may be curved outward, in consequence of the child leaning forward and supporting himself upon his wrists and the heels of his hands when sitting up. In other cases the bone is bent at the insertion of the deltoid—a deformity which all now agree is due, not to the contraction of that muscle drawing the superior extremity of the bone upward and outward, but to the weight of the arm, which bends the humerus when the member is drawn up and supported by the deltoid.

The bones of the forearms, from the child leaning forward upon its hands to afford it support and to enable it to call the supplementary muscles of respiration into play, may be bent outwards and forwards. In addition to this, as the hand must be pronated in order to allow the back part of its palmar surface to come in contact with the object upon which it leans, the bones are not only bent, but are apt to be twisted on their axes. One arm may be more deformed than the other, for the simple reason that the child may bear more weight upon one hand than upon the other.

The femur may be bent in one of several directions. The normal curve of the bone anteriorly may be increased, or it may be bent inwards or outwards. The first is due to the limbs hanging unsupported while the child is sitting on its mother's lap or upon a chair; the latter have their origin in the weight of the body, the child being able to walk, or at least to stand, at the time, and the direction is determined by the amount and location of the relaxation of the ligaments of the extremity. The neck of the femur is sometimes found to be deformed, the head of the bone being depressed so that its upper edge is on a level with or even below the corresponding margin of the great trochanter.

The bones of the leg are usually bent forwards and outwards, in which case the knees are widely separated. In other and rarer instances the knees are approximated, while the legs are directed obliquely from each other. These variable deformities receive their direction from the influence of the normal curve of the bones of the part, and the degree of relaxation of the lateral ligaments of the knee or ankle joints. If the external ligament of the knee is the one which is affected, the lower end of the femur and upper end of the tibia will be thrown outwards; while if it is the internal which is involved, precisely the opposite effect is produced. On the other hand, the knee remaining tolerably firm, if the internal lateral ligament of the ankle is stretched, the foot, with the lower end of the tibia and fibula, will turn outward, while the knees will be approximated, and even knock together. This form of distortion (knock-knee) Lonsdale¹ and Little² claim to be the most frequent—a statement which is not true of the disease in Philadelphia, whatever may be the case in London. The knees are usually widely separated, the lower ends of the ossa femora and the upper ends of the tibiæ being directed outwards. In extreme cases the bones of the leg may be twisted upon their axes and irregularly distorted in various ways, from the pressure to which they were subjected while in their softened state. The writer has a few times met with marked deformity which had been produced by a faulty habit of the child in sitting.

It is to be remembered that there is no definite relation between the softness of the bones and the enlargement of the epiphyses. Either one or the other may be in excess, and it is not at all uncommon to find the former exceed the latter. We have several times seen children with little enlargement of the wrist, elbow, ankle, or knee, and without bending of the bones, quickly have the latter developed to a high degree very soon after they began to walk.

The lesions of the extremities have been described somewhat out of the order in which the various parts of the body are usually involved. Had this been followed, the changes in the thorax would have been described first, afterwards those of the head, while the distortions of the extremities

¹ Lancet, 1855, vol. i.

² On Deformities, 8vo., London, 1853.

would have occupied the third place. The last, however, are among the most obvious of the deformities. In detailing an account of the remainder of these, those of the head will be described first, and afterwards those of other parts successively, from above downwards.

The rachitic alterations of the cranium may mainly be comprised under the following heads:—

1. Alterations in the thickness of the bones.
2. Changes in the size, with imperfect closure of the anterior fontanelle.
3. Alterations in the shape.

Changes in the Thickness of the Bones.—This may be diminished or increased. The first of these is one of the most frequent and important of the physical alterations of the cranium, since it is sometimes associated with grave nervous disorders. As has been stated previously, this craniotabes of Elsässer, or perforation of the bones, is one of the earliest of the local alterations of the disease. It is probable, as we shall attempt to show in the sequel, that it is preceded by other lesions of the bones which it affects.

It is exceedingly strange that Jenner, in speaking of the distinguishing characters of the rickety head, does not mention craniotabes at all. The writer is well aware that some good authorities, among whom is Ritter, have expressed doubts whether craniotabes has any connection or not with this disorder. On the other hand, Virchow unequivocally commits himself to the affirmative side of the question, a position which may be supported by the strongest arguments.

Very early in the progress of the disease the occipital bone may become exceedingly thin, and even perforated, so that nothing separates the brain from the inner surface of the scalp but the dura mater and pericranium, which are in contact. This condition should always be sought for in all doubtful cases of the disease, and the younger the child the more important it is to make the examination. It has already been stated that this may be the earliest physical sign of rickets, but the writer is exceedingly doubtful whether it is so in five per cent. of all the cases. It has not been so in those which have come under his notice. The sign is by no means a constant one. Among the rachitic infants at the Philadelphia Hospital it was not discovered in more than forty per cent. of all the cases.

Craniotabes does not affect the whole of the cranium, but only the posterior portions, and in all, excepting rare cases, only the occipital bone. Of this no part of the portion developed from membrane certainly escapes excepting the central protuberance, which is never involved. In patients in whom the disease is very severe, the posterior margins of the parietal, and, in very rare instances, even the squamous portions of the temporal bones, may be involved. The parietal protuberance, like the occipital, is never diseased, and the perforations are usually situated and must be sought for a little distance from the sutural margins of the bone. This is

in accordance with a pathological law announced by Dr. Allen, of Philadelphia,¹ viz., that in those cases in which there is a premature accession of blood to the sutural portions of the bone, the area of deficiency in ossification is always somewhere between the centre of ossification and the margins of the bone. It is to be remembered, too, that only the upper portion of the occipital bone, in other words, that part of it which is developed from membrane, is attacked, while that which is produced from cartilage always remains healthy, so far as we are aware.

Craniotabes is one of the most important of the numerous signs of rachitis, yet it has never received the careful study which it deserves from any English or American writer, excepting Jacobi, of New York, whose able memoir² upon the subject is the most valuable contribution to its literature in this country. In order to detect craniotabes, or "the soft occiput," the head of the patient has to be examined with some care. The physician should take a position immediately before the child, and, placing the heel of his hand upon either temple, carefully examine the upper portion of the occipital and the posterior portions of the parietal bones with his fingers perpendicular to their surfaces. If perforations of these exist, they are easily detected as round or oval spots, situated *just within the* sutural margins. They are soft and easily depressed, and impart the sensation of an orifice in the bone, closed by parchment or "cartridge paper." Vogel always goes over the head twice, the first time using but little force, and the second making firmer pressure. He asserts³ that a perforation only a line in diameter can be detected in this manner. It is necessary to use some precautions in making the first examination, because we have the authority of Niemeyer⁴ for saying that pressure upon these soft spots sometimes induces convulsions.

The number of perforations varies greatly. There may be but one or two, or there may be many. I recently presented a skull at the Pathological Society⁵ of Philadelphia which contained twenty-two craniotabic spots, and in others I have seen as many as twenty-five. Elsässer⁶ has figured and Vogel has reproduced the illustration of a cranium in which there were thirty such openings in the occipital and parietal bones. Some care should be exercised in order to avoid mistaking deficient ossification for craniotabes, which should not be said to be present unless some of the orifices in the bones are located a little distance from the lambdoidal or sagittal sutures.

The mode in which craniotabes is produced is of some interest, especially

¹ Amer. Journ. Med. Sciences, Oct. 1870, p. 405.

² Amer. Journ. of Obstetrics, Nov. 1870.

³ Dis. of Children, 8vo., N. Y., 1870, p. 526.

⁴ Pract. of Med., 8vo., N. Y., 1869, vol. ii. p. 512.

⁵ Proceed. of Pathological Society of Philadelphia, vol. iii. p. 189.

⁶ Op. cit.

as the condition has connection with certain grave nervous disorders. It is important to remember that the perforation of the skull is not the first step in the process, but that it is preceded by thickening and softening of the bone, such as is seen in the parietals and frontals of a child affected with rachitis. This condition having come on, the perforations are produced by pressure from the brain upon one side, and counter-pressure by the pillow upon the other. In this way only can be explained the occurrence of the change in the occipital and posterior part of the parietal bones. It is certainly not peculiar to these, for others have seen it in other parts, as in the frontal and anterior portions of the parietals, when the position of the child brought the pressure upon these. This is the mechanism of its production which is adopted by Niemeyer, Jacobi, Rindfleisch,¹ and others, and the writer has been forced to admit its truthfulness while seeking for another cause. Meigs and Pepper say that these "soft spots" are "more probably due to irregular deficiency of ossification." This is an error, for these orifices are not left thus in the growth of the bone, but are formed afterwards by the resorption of the osseous tissue. Other arguments might be brought forward to prove the incorrectness of their statements, but they are unnecessary.

The mechanism described furnishes a ready explanation for some of the symptoms which accompany the craniotabic process. These children are very intolerant of pressure upon the occiput, and they become restless as soon as they are laid down, roll their heads from side to side, and are never so comfortable as when held in the nurse's arms, with their heads resting on her shoulders.

There are associated with this condition of the occiput certain very important nervous disorders, the treatment of which is much facilitated by understanding the connection between them. In 1843 Elsässer expressed the opinion² that laryngismus stridulus depended upon and was produced by craniotabes. Dr. West combats this view.³ Mr. Lawson Tait,⁴ in one of the most recent and interesting papers upon the affection, carefully reviews the whole subject of its causation, attributing spasm of the glottis to tubercular inflammation of the meninges of the brain. Mr. Tait, from a footnote to his paper, appears not to have been informed about the statements of Jenner and others in regard to its association with rachitis, until after his article was partly written. It is at least certain that laryngismus is not by any means common in tubercular meningitis. We have preserved notes of numerous cases, and do not find it mentioned in one of them. Jenner has nothing to say⁵ about the association of the two conditions, but bears the

¹ Text-Book of Pathological Histology, 8vo., Phila., 1872, p. 570.

² Der Weiche Hinterkopf, 8vo., Stuttgart, 1843.

³ Dis. of Children, 4th ed., 8vo., Phila., 1868, p. 164.

⁴ Dublin Quart. Journ. Med. Sci., Feb. 1871, p. 124.

⁵ Med. Times and Gazette, 1860, p. 465.

important testimony that of all the numerous cases of laryngismus which he has seen, only two have been unconnected with rickets, thus expressing a most positive opinion in regard to the dependence of this nervous affection upon the cachexia which we are discussing. Gee, of London, informs us¹ that "spontaneous laryngismus is always associated with rickets, and that forty-eight out of fifty cases seen by him were unquestionably rickety." Smith,² Aitken,³ Tanner,⁴ Hillier,⁵ and J. Hughlings Jackson⁶ all recognize the coincidence of these conditions. Vogel associates, not rachitis and laryngismus, but craniotabes and laryngismus, stating that the frequent concomitance of the two is an irrefutable fact, but that, as yet, we have no conclusive proofs as to cause and effect. He remarks, however, "that cases have been recorded in which spasm of the glottis could be voluntarily produced by pressure upon the softened places of the rachitic occiput."⁷ Meigs and Pepper⁸ give little prominence to the connection between rickets and laryngismus. They seem to think that its occurrence in children affected with this disease is due rather to nervous irritability and debility than to any special influence of the soft occiput or of the rachitic diathesis. They seem to have entirely overlooked the importance of laryngismus as a symptom. Lederer⁹ found that ninety-two out of ninety-six cases of laryngismus stridulus were concomitant not only with rickets, but with craniotabes. Willshire¹⁰ recognizes the connection of nervous disorders with this condition of the cranium, and attributes them to the yielding state of the skull, which allows pressure upon the brain. Friedleben¹¹ insists that craniotabes is the only source of laryngismus, and Jacobi,¹² in his able memoir upon this subject, says that he has seen but one case in his life in which this affection of the larynx was unassociated with the "soft occiput." The writer has seen quite a number of cases of laryngismus, and of ten which have come under his notice since his attention was directed to the subject, all were rachitic, and nine were at the time the subjects of craniotabes.

The importance of this relation can scarcely be overestimated, for the older writers, who viewed this symptom as a distinct disease, and treated it by various antispasmodic and tonic remedies, bear testimony to the fact

¹ St. Bartholomew's Hosp. Reports, vol. iii., 1867, p. 103.

² Wasting Dis. of Children, 8vo., Phila., 1870, p. 87.

³ Reynolds's Syst. of Med., London, 1866, vol. i. p. 786.

⁴ Diseases of Children, 2d ed., London, 1870, p. 786.

⁵ Diseases of Children, 8vo., Phila., 1868, p. 112.

⁶ Reynolds's Syst. of Med., 8vo., London, 1866, vol. ii. p. 223.

⁷ Op. cit., p. 274.

⁸ Dis. of Children, 4th ed., Phila., 1870, pp. 513, 516, and 638.

⁹ Brit. and For. Medico-Chirurg. Review, July, 1856, p. 65.

¹⁰ Op. cit., p. 65.

¹¹ Quoted by Jacobi.

¹² Amer. Journ. of Obstet., Nov. 1870, p. 456.

that it was eminently fatal. However, it should but rarely terminate in death, and if the attention of the physician is but directed to the associated cachexia rather than to the more prominent laryngeal symptoms, he will almost always have the satisfaction of seeing his little patients recover. The writer has never seen a fatal case of spasm of the glottis, and he cannot forbear expressing the opinion promulgated by Elsässer in 1843, and reiterated by Willshire,¹ that there is between these conditions the relation of cause and effect. It cannot, however, be denied that the few exceptional cases of Lederer, Jenner, Gee, Jacobi, and others, have established the fact that, in rare instances, laryngismus stridulus may occur without being associated with rickets or its symptom craniotabes.

If the doctrine here expressed is true, the treatment of one of the opprobria of medicine becomes exceedingly simple—nay, more, we have for it specifics almost as certain as quinia is for intermittent fever. This view being accepted, the portly octavos of Marshall Hall and Ley may remain untouched upon the shelves of their possessors, while their elaborate and fine-spun theories are interesting only as marking the progress of scientific research.

This opinion, if true, overturns a doctrine hallowed by the tradition of ages, that these spasms of the larynx may depend upon difficulties of dentition—a superstition which even the most favoured text-books upon the diseases of children still promulgate. Countless numbers of suffering infants, labouring under this and other nervous disorders due to rachitis, have been subjected to the additional irritation of having their gums lanced, when the slow and painful irruption of the tooth and the spasm of the larynx both depended upon the same cause—the constitutional affection from which the child was suffering.

We cannot refrain from saying that, after no mean experience in private and hospital practice, we have never possessed a gum-lancet, and have never lanced an infant's gums, a course which we see no reason to regret, and we cannot but express the hope that the coming generation of medical men may look upon this practice of our fathers as one which, though occasionally useful, is in the vast majority of cases "more honoured in the breach than in the observance."

Craniotabes not only affords an explanation for that hitherto incomprehensible symptom laryngismus stridulus, but it also explains the origin of "inward spasms," "holding-breath spells," and other like phenomena, with which every physician is sufficiently familiar, and which are really mild attacks of laryngismus. These symptoms are only too common, and

¹ The name of this author appears as thus spelled in the original articles written by him, and published in the *Lancet* (p. 95, vol. i., 1854) and *British and Foreign Medico-Chirurgical Review*, while Aitken and Jacobi spell it Wiltshire.

if invariably looked upon as the result of some reflex irritation from the teeth, stomach, or bowels, they prove but too obstinate, while if the condition upon which they depend is treated, they rapidly and certainly disappear. We would not be understood as saying, however, that a child with craniotabes will necessarily have laryngismus. Such is not the case. The well-developed disease is not a very frequent one, while the minor forms spoken of above are very often met with. Meigs and Pepper do not think laryngismus is a common affection in Philadelphia, though it is not an extremely rare one. Other American writers upon this subject appear to be silent upon this point. It seems probable that, with the advance of civilization, the overcrowding in our large cities, and the influx of a large foreign population, laryngismus, which is now by no means rare, may become more common.

The doctrine that laryngismus depends upon craniotabes is supported by the following arguments:—

1. The diseases occur at the same age. Almost all authors, whatever may be their views in regard to its nature and pathology, admit that spasm of the glottis is a disease of childhood, and that it is limited to children under *three years* old. It is occasionally met with in those who have passed this age, but it rarely sets in beyond it. Even Ley¹ and Marshall Hall² admit this fact.

2. They are developed by the same causes. Speaking of laryngismus stridulus, Dr. Clark uses the following very expressive language: it does “not often occur in *children who have lived by sucking till they have teeth*, and have never taken animal food till the *dentes cuspidati* have come through.”³ Dr. West, who denies the relation between laryngismus and rachitis, writes, “I have *never seen an infant while efficiently suckled* by a healthy nurse or mother present any of the symptoms of rickets, even though the hygienic influences by which it was surrounded were in other respects unfavourable.”⁴ Ley says,⁵ “indiscretions in diet notoriously aggravate the disposition to this complaint.” Diet which is unsuited to the delicate wants of the infant is one of the most fertile causes of rachitis, and impure air, want of cleanliness, and other like causes, are potent aids in the production of both diseases.

3. Pressure is an important exciting cause of laryngismus stridulus. Able authorities have shown that craniotabes is due to pressure of the brain and counter-pressure of the pillow upon the diseased occipital bone. All authors upon spasm of the glottis bear testimony to the fact that the paroxysms are apt to occur at night, and after the child has been some time in bed or is about waking.

¹ Essay on Laryngismus Stridulus, 8vo., London, 1836.

² Lectures on the Nervous System, 8vo., Philadelphia, 1836.

³ Commentaries on Diseases of Children, part i. p. 90.

⁴ Diseases of Children, Philadelphia, 1868, p. 589.

⁵ Op. cit., p. 58.

Hall reports¹ a case which, at first sight, appears to detract from the weight of this doctrine, but which really supports it. The patient, a boy, was the subject of spina bifida, and whenever he turned so as to press on the tumour, he had croup-like convulsions. This is to be contrasted with Vogel's statement,² that spasm of the glottis can sometimes be voluntarily induced by pressure on the rachitic occiput. In these instances the laryngeal symptoms result, not from the direct pressure upon the spinal cord in the one instance, and upon the posterior portion of the cerebrum and the cerebellum in the other, but from the force being transmitted through these to the medulla oblongata and adjacent centres. Moreover, the immediate exciting causes of laryngismus stridulus are those in which the pressure in the brain is augmented, and the irritated meninges brought in contact with the diseased portions of the occipital and parietal bones. Thus, most authorities agree that anger, fright, the act of coughing, or anything which suddenly directs a considerable quantity of blood to the head, are among the most powerful immediate causes of the paroxysms when they occur during the daytime.

4. Both rachitis and laryngismus are cured by the same remedies. In treating the latter, that physician is the most successful who ignores its existence and directs his attention to the diathesis upon which it depends. In support of this opinion, we have the testimony of such good observers as Jacobi, of New York, and Gee, of London.

Laryngismus is not the only nervous affection which is associated with this diathesis.

In 1867, Dr. Gee published a paper,³ in which he made the somewhat astonishing statement that no less than fifty-six out of sixty-one eclamptic children were rickety. He had been preceded in his observations by other authorities, for Petit⁴ undoubtedly recognized the fact that rachitic children were peculiarly liable to convulsions, though he attributed the disease of the bones to the convulsions. Elsässer seems to have been the one to have directed attention prominently to this subject,⁵ attributing the eclampsia to craniotabes, and consequent pressure on the brain. He says that the convulsions may be either simple or tetanic, and that they occurred in fourteen out of twenty-nine cases of the "soft occiput." Of these infants ten died. It is to this convulsive tendency that the chief mortality of craniotabes is due. Merei likewise recognizes⁶ the importance of convul-

¹ Diseases and Derangements of the Nervous System, 1841, p. 99.

² Diseases of Children, p. 274.

³ St. Bartholomew's Hosp. Reports, vol. iii. p. 101.

⁴ A Treatise on Diseases of the Bones, London, 1726, pp. 466-469.

⁵ Der Weiche Hinterkopf, Stuttgart, 1843; and Brit. and For. Medico-Chirurg. Rev., vol. xvii. (April, 1844), p. 375.

⁶ Infantile Development and Rickets, London, 1855, p. 197.

sions as one of the "diseases of rachitic children," but makes no mention of its connection with cranial disease.

Niemeyer recognizes¹ convulsions as at least one of the concomitants of craniotabes, and adds the important fact, to which allusion has already been made, that pressure over the soft spots will induce them in some children.

While Elsässer recognized the association of eclampsia with rachitis, it is evident that he did not think it so close as Gee would seem to believe it to be. The assertions of the latter author are certainly very startling, and, after several years' close study of this disease, the writer cannot help saying that he believes them to be exaggerated. In round numbers, according to Gee, convulsions are associated with rickets in ninety-two per cent. of all the cases. Fearing that he would "incur the charge of exaggeration," he states that his experience has been "wholly derived from the children of the poor." The author, from his previous connection with the Philadelphia Dispensary, as one of its out-door physicians, and more recently as physician to the largest children's hospital in this city, is wholly unable to confirm this opinion. In the former position he saw and treated the children in their own homes. In the latter he sees many who, being inmates of a large general hospital, are necessarily surrounded by unhealthy influences. While rickets is exceedingly frequent among both classes, eclampsia is not very common; and while we recognize the importance of the fact that convulsions and rachitis are frequently associated, we do not believe that more than twenty-five per cent. of the eclamptic children who have been under our care have been the subjects of this cachexia. The connection between them is close enough to make me examine the extremities of the ribs and occiput in all cases of fits. My experience would lead me to believe that craniotabes is connected with spasms of certain muscles, or groups of muscles, much more frequently than with fully-developed eclampsia. Laryngismus stridulus is much more certainly associated with the diathesis than general convulsions are.

Increase in Thickness of the Bones of Skull.—About this we do not intend to say much, as this condition is not easily detected during the life of the patient.

If the disease is highly developed, however, some thickening of the sutural margins of the bones, somewhat analogous to the swelling of the epiphyseal portions of the long bones of the extremities, can be detected.

Alterations of Size.—In a large number of cases of rachitis the head appears to be increased in size, while the face is proportionally small. In rachitic children the fontanelle may remain open until the end of the third or fourth year, and, indeed, the ossification may not be completed until the termination of the sixth. A large and patent anterior fontanelle at the

¹ Practice of Medicine, vol. i. p. 512.

end of the second year, without any other sign, has been set down by some authors as sufficient to lead to the very grave suspicion of the rickety diathesis. This may be true, but we have never yet met with a patient in whom this was present, and not associated with other evidences of intracranial disease or of the rachitic cachexia.

In connection with this, it is to be remembered that the size of the anterior fontanelle varies with the age of the child, and that it does not steadily decrease from birth until the end of the second year. On the contrary, it grows larger during the first six months after birth, and does not begin to diminish in size until after the child is nine months old.¹

In the opening sentence of this section, the words "the head *appears* to be" enlarged, were used. This was done advisedly, for almost all authors, down to the time of M. Ruz, speak of the head as positively increased in size in this disease—which is by no means the case. He showed² by actual measurement that the cranium is but little altered, and that both its longitudinal and transverse diameters remained nearly normal. In 1832, Mr. Alexander Shaw announced³ the important law that in rickety skeletons all the bones—aside from their deformities—are, to a certain extent, deficient in size. The want of development is greatest in the pelvis and legs, next so in the thorax and upper extremities, while the deficiency in size is least in the head. So far as the size of the head is concerned, its chief alteration is in the face, which is relatively much smaller in the rachitic than it is in the healthy individual. As Gee says: "It does seem as if in rickets the cranium was the only part of the body which goes on growing to anything like a natural degree."⁴ Yet Mr. Shaw found that the cranium was one twenty-first part less than its normal dimensions, while the face is diminished about one-fifth of its bulk. In health the cranium is to the face as six is to one, while in rachitic persons it is as seven and one-thirteenth to one.⁵ Mr. Humphry makes the difference rather less, for he says that the deficiency in the face is only one-fourteenth of its bulk.⁶

Changes of Shape.—These are various, but two general types may be noticed: 1. The antero-posterior diameter of the cranium may be increased; 2. It may lose its natural round outline and assume a square one.

The latter is by far the more frequent change. The best examples of rachitic long heads that I have ever seen have been among negro children, and I have met with it very rarely among the whites, though some

¹ Elsässer, *op. cit.*

² Recherches sur le Rachitisme des Enfants. Encyclographie des Sciences Médicales, Mars, 1834.

³ Medico-Chir. Trans., London, vol. xvii. p. 434.

⁴ St. Bartholomew's Hosp. Reports, vol. iv. p. 74.

⁵ Trans. Med.-Chir. Soc., London, 1843, vol. xvi. p. 343.

⁶ Medico-Chir. Trans., vol. xlv. p. 312.

authors describe it as the characteristic alteration in the shape of the head.¹

The square head is a very common product of rachitis. In these cases we find the forehead projecting, while the prominences of the frontal and parietal bones appear very much enlarged. At the same time the cranium is depressed upon the top and behind. The sutures are somewhat depressed, especially the frontal. This change in the outline of the head is associated with the patent anterior fontanelle, to which allusion has already been made, and often with open sutures, especially the sagittal and coronal. In health, the former closes about the end of the first year; the latter, with the lambdoidal, in three or four months.² I have repeatedly seen all of these open at the end of a year, and even later. Sometimes the sagittal is separated to the width of the index finger. The two halves of the frontal bone often fail to unite until a late period. I recently reported a case to the Pathological Society of Philadelphia,³ in which they were separated quite to the root of the nose, in a child nine months old. The space between them was at least a quarter of an inch in width, and was filled by membrane. In cases in which the cachexia was highly developed, we have several times witnessed the same thing in children over a year old.

Particular attention has been called to the fact that the characteristic deformity of the head is smallness of the face, with a cranium relatively but not absolutely large and square in outline, the latter peculiarity being due to the prominence of the frontal and parietal protuberances. All of this is in accordance with an important general law which governs the changes in rachitic skeletons, and which may be briefly announced as follows: Aside from the distortion by bending or twisting, rachitic bones are characterized by an arrest of development, with a retention of the foetal type. This law applies to all parts of the body. The long bones are not only twisted and stunted in their growth, but they may likewise be imperfect in their form, that is, to a certain degree approach the infantile type. And so with the cranium. The large head by which a person who was rickety in his youth may be distinguished in his after life—and in some cases even though there may be no other visible deformity—is nothing more than that the head retains the peculiarities which distinguish it be-

¹ Dolichocephalus is the result of increase in the size of the brain, and not of the effusion of serum. The relative form may be connected with rickets, but an absolutely long head does not occur as the result of this disease. The size of the head depends upon that of the brain, and the upper part of the cranium grows with it, while the base grows with the skeleton, and not with the brain. The latter is proportioned to the size of the body, and not to the size of the brain. *St. Bartholomew's Hosp. Reports*, vol. vii. (1871), p. 8.

² Vogel, *Dis. of Children*, p. 525.

³ *Amer. Journ. Med. Sci.*, April, 1871, p. 426 et seq.

fore and immediately after birth. Mr. Shaw recognized and called attention to this interesting fact in his important papers.

Any one on picking up the skull of a foetus at full term must be struck with the following peculiarities: 1. The small size, proportionally, of the bones of the face; 2. The prominence of the frontal and parietal protuberances, which give to the head a square outline. This is precisely what we see in the cranium of a rachitic person.

To carry the argument a little further—and it may as well be done here as later—we have already stated that we not unfrequently find the humerus shorter than the bones of the forearm, and the femur shorter than those of the leg, in a person who in his youth has been the subject of the highly-developed cachexia. The same individual, aside from all deformity, will have a small pelvis. We have already stated that the investigations of both M. Guérin and Mr. Shaw have shown that the interference with development is greatest in the inferior extremities. In this we have but a retention of the infantile peculiarities of the skeleton, in which the size of the head so greatly exceeds that of the pelvis, and that of the head, chest, and arms exceeds that of the abdomen, pelvis, and legs. And, indeed, there is a return to a type which exists before birth, in which the head so largely preponderates over the rest of the ovum, and in which the forearms and legs have attained considerable size while the arms and thighs are yet scarcely formed. We find that the same disposition for the distal to preponderate over the proximal portions of the extremities continues for some time after birth, and that the final relation between these parts is not established until after puberty.¹

The fact that the femur is shorter than the tibia more frequently than the humerus is shorter than the bones of the forearm² finds the same explanation, for the upper appear before the lower extremities in the foetus.

But to return to the deformities of the head, Mr. Shaw has attributed³ the prominence of the forehead to the small size of the frontal and maxillary sinuses. This is obviously incorrect, for the frontal sinus is not developed until after puberty,⁴ while all know that in the healthy child the cranium loses its infantile peculiarities long before it reaches this period of its existence. Moreover, as has already been stated, prominence of the frontal protuberances is not the essential characteristic of the rachitic head, but that in addition to this the bosses of the parietal bones appear equally enlarged, thus imparting to the cranium its square outline. But there are no sinuses in the parietals to account for these changes, and they cannot be attributed to the cells in the temporal bones, for there is no connection between them. In addition to this, we often see the parietal bones affected alone.

¹ Humphry, *The Human Skeleton*, 8vo., Cambridge, 1858, p. 98.

² *Ibid.*, p. 100.

³ *Trans. Medico-Chirurg. Soc., London*, vol. xxvi. p. 355.

⁴ Humphry, *Human Skeleton*, p. 246.

These changes may rather be explained by the laws governing the development of these bones and the occurrence of disease in them. These prominent parts are at or near the primary centres of ossification, and in many autopsies of rachitic children I have never yet seen the rachitic process affect these parts but according to the law announced by Dr. Allen,¹ and previously applied to the occipital bone, viz., that in those diseases in which there is a premature accession of the vascular supply to the sutural margins of the bone, the deficiency of ossification is between the centre of ossification and the margins of the bone. This is precisely what we have found in craniotabes, and precisely what we find in the parietal and frontal bones. If one of these from a child, the subject of well-developed rachitis, be examined, the following peculiarities will be detected:—

The prominences, or the centres of primary ossification, will be found nearly normal, without much increase in vascularity, and with both the inner and outer tables firm, smooth, and perfect. The sutural margins may be a little thickened, but soft and succulent, while the remainder of the bone is soft—so soft that it may be bent almost like wax, or cut with the scissors like paper. Sometimes one can almost break them down with the fingers. This, with arrested development, allows these bones to retain their foetal peculiarities even throughout adult life. It cannot be doubted that the frontal sinuses are small and imperfectly developed in many of these cases, but this is nothing more than a retention of the infantile form in accordance with the law which we have previously announced, and is by no means to be looked upon as the cause of the peculiar shape of the rachitic head.

It is not strange that some, on account of these peculiarities in the shape of the cranium, and their association with a patent anterior fontanelle and open sutures, should have supposed these children to be the subjects of hydrocephalus. Some good authorities have said that this condition of the skull is the result of cerebral effusion, and Portal and Naumann² described a form of acute hydrocephalus as due to rickets. West, on the other hand, unable to find hydrocephalus, attributed the apparent enlargement of the head to an “overgrowth of the brain itself.”³ This is scarcely nearer the truth than Lonsdale’s explanation,⁴ according to which the bones have not sufficient strength to resist the internal pressure, or to form a close junction by the union of their sutures, owing to imperfect ossification, and the growing brain expands the cranium before this has taken place.

We have already explained the cause of these changes in the head, and

¹ Amer. Journ. Med. Sci., Oct. 1870, p. 405.

² Quoted by Aitken, Reynolds’s Syst. of Med., vol. i. p. 786.

³ Dis. of Children, Phila., 1868, p. 590.

⁴ Lancet, 1855, vol. ii.

do not hesitate to add, that neither the size of the brain nor the effusion of fluid into the cranial cavity has anything to do with them. The brain at birth is very large in proportion to the size of the body; its average weight is ten ounces.¹ Granting that seven and a half pounds is the average weight of the new-born infant, the weight of the brain is to that of the whole body as one to twelve.

In round numbers, the average adult brain weighs fifty ounces,² and if the usual weight amounts to 130 pounds, the weight of the brain is to that of the body as 1 to 41 $\frac{3}{5}$. From birth until the end of the second year the weight of the brain is doubled,³ but it by no means follows that the cranium has proportionally increased in size. On the contrary, the circumference of the foetal head is 15 inches, while at the end of the second year it is only 17.7.⁴ It is to be remembered that the increase in the weight of the brain is not so much due to its growth as to an advance in its development. The organ, which was white, soft, and watery at birth, has now become more solid and firm, with deeper convolutions.

But suppose that this advance in the development of the brain was not to occur, and this is precisely what often happens in rachitis. Every one familiar with the autopsies of these little patients must have been struck with the pale, watery brain, the substance of which often has the appearance of corn-starch. The organ breaks up easily, the two halves often separating from their own weight when it is laid upon the table. This attracted the attention of Merei, for he says, "in some of them the organ appeared strikingly anæmic and soft."⁵ In some instances the growth of the brain may not be interfered with, notwithstanding it remains undeveloped, and in these cases it fills the cranial cavity, and even appears large in proportion to the child's body. In others, however—and these cases are by no means uncommon—it is small in size, since it, as well as all other parts of the body excepting the cranium, is stunted in its growth. In these cases, where the organ does not fill the brain-case, there is an effusion of serum into the ventricles or upon its surface. This is not a hydrocephalus, but a mere passive exudation to fill the space that ought to be occupied by brain-substance. In the production of this effusion the same disposition, to which allusion has already been made in connection with the bones, is manifested in the brain—a disposition for the organ to retain the infantile type. Hydrocephalus is not a necessary part of the rachitic changes of the head; it is often absent; and this may occur in those cases in which the deformity is the greatest, the fontanelle the largest, and the sutures the widest.

¹ Tanner, *Dis. of Children*, London, 1870, p. 13.

² Gray's *Anatomy*, p. 510.

³ West, *Dis. of Children*, p. 37.

⁴ Humphry on the *Skeleton*, p. 110.

⁵ *Disorders of Infant. Development and Rickets*, p. 157.

The last physical sign to which attention will be directed in connection with the head is dentition. This is ordinarily retarded, and the simple fact that a child has reached his ninth month without dentition having commenced is enough to lead an intelligent physician to suspect commencing rachitis. Not only does dentition commence late and progress slowly, but the irruption of the teeth is attended with great pain, and they are irregular in time of appearance and position.

The extent to which dentition may be delayed varies much in different cases. It is no uncommon thing to meet with rickety children a year or eighteen months old in whom dentition has not commenced. The writer has met with a single instance of a rickety child in whom the primary teeth failed to make their appearance at all. The same was noticed by Van Swieten, for he says, "I have seen some youths, who had been negligently treated in the beginning of this disease, continue toothless during life."¹

They appear with difficulty, and often with severe suffering, and are irregularly set in the jaws. This is owing to the imperfect development of the jaws, which, being smaller than in healthy children, do not afford sufficient room for the natural irruption of the tooth. To this cause may be ascribed many of those symptoms which authors so often attribute to dentition. In a healthy child this, which is a natural and physiological process, is unattended with any serious phenomena, and it is in these sickly and cachectic infants that the teeth appear painfully, slowly, or not at all. Moreover, the cachexia must be peculiar—in other words, rachitic—or this will not occur, for in cases of chronic diarrhoea and other wasting diseases of children the teeth appear at the usual time and in the usual manner. This is true, though the little patient may be emaciated to the last degree, while in rickets dentition is often much delayed and very difficult when the lesions connected with the long bones are but slight and the child presents the external evidences of moderate health.

The teeth themselves are imperfectly developed, deficient in enamel, decay in a very short time, and, as Glisson so truthfully remarks, "fall out by pieces." It is no rare thing to see one of these children almost toothless long before the permanent set should appear.

The clavicle is often much deformed. I have several times seen it form a visible tumour at the root of the neck, and Beylard figures analogous cases.² The distortion of this bone is sometimes out of all proportion to the bending or twisting of the bones of either the upper or lower extremities, but I have never met with it unassociated with severe lesions of the chest. The first curve, which is usually directed somewhat upwards and forwards, is always situated just without the attachment of the sterno-

¹ Commentaries, &c., Edinburgh, 1776, vol. xvii. p. 385.

² Du Rachitis, &c., 4to., Paris.

cleido-mastoid muscle. The second is near the humeral extremity of the bone, which is pushed backward. In most cases this deformity is due to the child sitting with its hands resting on the floor or some other object for support, in order to obtain a fixed point for the action of the supplementary muscles of respiration. Its connection with the thoracic deformities thus becomes obvious.

Thorax.—No rachitic lesions are more interesting and important than those of the thorax, and, of all the long bones, the ribs are the ones which are most frequently involved. The beading of these, and the importance of this as the initial physical sign of the disorder, have already been spoken of at sufficient length. It is with the ulterior changes in the chest, and those which may directly endanger the child's life, that we have to deal now.

Almost all rachitic infants present these deformities to a greater or less degree. In the early stage of the disease they consist simply of a transverse constriction on a line with, or a little below, the ensiform cartilage, accompanied by two vertical depressions running downwards and slightly outwards, and situated along the sternal extremities of the ribs. These, it will be observed, are precisely the depressions that are to be met with in any case of infantile bronchitis, or any disorder in which respiration is obstructed.

If the disease progresses, however, the distortion is very much increased. Glisson¹ described this with remarkable fidelity, but it remained for Jenner, so late as 1860,² to furnish a perfect account of the change. In these children the back is flattened and the sides of the thorax are compressed, while the sternum is thrust forward. The ribs at the junction of the posterior and lateral portions of the chest are sharply curved; from thence they run nearly directly forward until near their sternal extremities, which are somewhat bent inward. In extreme cases, I have sometimes found the bodies of the ribs bent, and actually curved inwards upon the sides of the chest and on a line with the axilla. The vertical depressions, which continue during this stage, are formed by the costal cartilages turning forward to join the sternum. The bottom of the groove is usually just without the sternal extremities of the ribs, but in other cases the nodes on these occupy the bottom of the depression, while in still others the side of the chest is depressed, and the furrow commencing just below the fold of the pectoral muscle involves chiefly the bony portions of the ribs. In these cases the beading is often plainly visible upon inspection. The vertical furrows commence at the first rib and run down to the ninth or tenth, and the one upon the right side is the deeper, while that on the left reaches a lower point. These differences are due to the presence of the liver upon

¹ Treatise on Rickets, 12mo., London, 1668, p. 237.

² Medical Times and Gazette, 1860.

one side and the heart upon the other. Indeed, owing to the diminution of the capacity of the thorax proper, the lower portions of its walls are pushed outward by the large liver and spleen, which are crowded further down into the abdominal cavity than is normal.

This deformity is often associated with enlargement of the tonsils. Merei has called attention to the fact¹ that enlargement of the tonsils is one of the diseases of rachitic children, but the most noteworthy reference to this association is that of Dupuytren,² who, after describing an almost typical rickety chest, goes on to say that "one remarkable point about these deformities is, that they are almost invariably accompanied by considerable enlargement of the tonsils, an association which it is difficult to account for." If any doubt remained that the thorax which Dupuytren described is rachitic—and which he does not seem entirely willing to admit—it is removed by his own statements. He says that in these cases there is "an arrest in the development of the skeleton, the bones of the head remaining separated at a period when normally they should have been united; the epiphyses being still isolated, the extremities of the long bones enlarged, and their shafts contorted and soft. * * * Dentition is late, and both first and second teeth altered in character, their crowns being eroded and furrowed on their anterior surface."³ This is certainly an assemblage of characters which renders the existence of rickets indubitable.

Some authorities have gone further than Dupuytren, and asserted that the change in the outline of the chest is an effect of the enlargement of the tonsils. The writer has met with numerous cases of hypertrophied tonsils in the Philadelphia Hospital. Among others, there is one boy at present in that institution who has been under almost continuous observation since 1865. In no instance did he ever meet with a thoracic deformity such as is described by Dupuytren, which could have been attributed to this cause. The two are results of one cause.

In rachitic deformity of the chest, of which very good illustrations are furnished by Vogel⁴ and Gee,⁵ the transverse diameter is sometimes less than the antero-posterior. The greatest width is opposite the posterior fold of the axilla, while the least is near the junction of the ribs with their cartilages.

There are several causes operating to produce this deformity. According to Rokitsky⁶ and others, it results from muscular action. Meigs and Pepper say⁷ that, "owing to the curvature of the spine, the ribs are flattened laterally," and deflections of the spine are mentioned by

¹ Op. cit., pp. 134, 135, and 197.

² Diseases and Injuries of the Bones, 8vo., Syd. Soc. ed., 1847, p. 385.

³ Ibid., p. 386.

⁴ Diseases of Children, pl. v., fig. 2.

⁵ Auscultation and Percussion, 12mo., London, 1870, p. 21.

⁶ Pathological Anatomy, 8vo., Phila., 1855, vol. iii. p. 195.

⁷ Op. cit., p. 637.

other authorities, but neither of these causes is necessarily in operation. The thoracic portion of the spine is often perfectly normal, and if changed, the alterations are due to muscular weakness rather than any disease of the bones.

The important cause, as was asserted by Jenner, is atmospheric pressure. He dissected the bodies of some rachitic children,¹ and found that the depressions and the attachments of the respiratory muscles bore no relation to one another. The phenomena are precisely those which follow any obstructive disease of the lungs, but they are produced in an exaggerated form. The act of inspiration, which produces a tendency to a vacuum, is performed almost in the usual manner; but before the air can enter through the trachea, atmospheric pressure has caused partial collapse of the chest-walls by pushing in the sides. I saw the same thing only a few weeks since, during the operation of tracheotomy in a young child. Towards the close of the operation she nearly suffocated, and the transverse constriction of the thorax was very deep, there were vertical depressions upon the sides, and during the act of inspiration, as almost no air was entering through the glottis, the costal cartilages were actually depressed, while during the expiration the muscles drew these parts outwards, and thus we had presented the anomalous feature of a thorax which was larger during expiration than during inspiration.

But in this disease the orifice of the larynx is normal, and the muscular power, though diminished, is considerable, but the relation which exists between these and the chest-walls is destroyed by the softening of the ribs.

In addition to atmospheric pressure, the elasticity of the lung aids in producing deformity by impeding the ingress of air. Inflammation of the bronchial mucous membrane, to which these children are very liable, may also tend to increase it, but it is important to state that this distortion may occur without any disease of the lungs whatever.

It is interesting to notice the influence of the recession of the chest-walls upon the contained organs. Lonsdale remarks² that he has noticed the great extent to which the ribs may be displaced, and the cavity of the chest thereby diminished, without creating any very great functional disturbance of the heart and lungs, while Willshire thinks³ that the action of the heart may be interfered with, and severe symptoms be produced. I have little doubt that the latter is correct. I have several times seen the apex of the organ displaced, while a little unusual exertion was followed by dyspnoea and irregular cardiac action. I was recently present at the autopsy of a girl, aged fourteen, a patient of Dr. Sparks. Though she presented no other evidence of rachitis than slight prominence of the forehead and marked deformity of the thorax, the axis of the heart was

¹ Med. Times and Gaz., March 17, 1860.

² Lancet, Sept. 1855.

³ Brit. and For. Medico-Chirurg. Review, July, 1856, p. 65.

nearly perpendicular, and upon its anterior surface, where it was in contact with the wall of the chest, was a large white fibrous patch. Its movements had been very irregular and feeble from infancy, and in the end this indirectly caused her death. Willshire and Jenner describe these fibrous patches upon this organ in rachitic children.¹

Lonsdale is certainly in error in regard to the lungs, for all know how these children suffer from pulmonary symptoms, how soon cough and dyspnœa come on, and how liable they are to fatal congestion or collapse of these organs.

The Spine.—Eulenberg speaks² of rickets as one of the causes of lateral curvature of the spine, and says that, next to antagonism of the muscles, it is the most frequent cause of this condition. Good authorities in the early part of the present century held the same opinion, and it remained for Mr. John Shaw to point out its untruthfulness.³ This writer announced the fact "that the spongy bones, as of the spine, carpus, and tarsus, are not so liable to be affected by rickets as the long bones."⁴ This, I believe, is true, and I am strongly inclined to doubt whether lateral curvature of the spine often has its origin in rickets. I have sometimes, though rarely, seen the two associated, but in these cases the primary curvature was always thoracic, was always associated with some pulmonary disturbance, and always appeared to have been produced in accordance with the ingenious mechanism described by Mr. Barwell.⁵

There is a form of spinal curvature, however, which is very often present, but it is antero-posterior, a simple exaggeration of the normal curves. It is no uncommon thing to see these children with their backs much bent, sitting in a heap as it were, the back rounded from the nape of the neck to the lumbar region. In other cases, and this is the most important spinal deformity, there is a strong anterior projection of the lumbar vertebræ, with a corresponding hollowness in the back. The former is the result of muscular debility, but the origin of the latter is more doubtful. It may be that it is due to the pelvic deformity.

We would not be understood to say that lateral curvature of the spine never arises from rickets. Shaw, in his fifth plate, figures a marked example of this distortion, which, however, is situated in the lumbar, and not the thoracic, region.

The Pelvis.—The deformities of this portion of the skeleton are of the utmost interest and importance. We have not the space to enter into any details in regard to them, and, indeed, this is rendered unnecessary, as

¹ Similar patches are frequently seen upon the surface of the spleen, where it comes in contact with the enlarged extremities of the ribs. In this instance they result from the movements of the organ in respiration.

² Brit. and For. Medico-Chirurg. Review, July, 1856.

³ Nature and Treatment of Distortions of the Spine, 8vo., London, 1823.

⁴ Ibid., p. 126.

⁵ Lateral Curvature of the Spine, London, 1870.

Dr. Harris, of this city, has in press a paper upon this subject.¹ One fact, however, deserves a passing notice. Hodge asserts² that the causes of the equally diminished size of the pelvis are unknown. One of these, at least, is rachitis. All recognize the importance of the various alterations in shape which these bones may undergo in this disease, but few obstetrical writers mention the fact that simple diminution in size, without deformity, is one of the consequences of rachitis. Naegele and Cazeaux³ deny it. Velpeau, Churchill,⁴ and Mr. Shaw recognize the fact.

This is but in accordance with the law previously announced, that all the distortions of the skeleton in this disease, aside from the curvatures of the bones from pressure, are the results of arrest of growth and development. Accordingly we find that the pelvis, in persons who have suffered from rickets during infancy, often retains during life its infantile characters and proportions to the rest of the body.

It is likewise important to remember that the existence of any form of rickety distortion cannot be determined except by a most critical and personal examination of the woman. The writer saw in consultation, a short time since, a patient who had been in labour for nearly twenty-four hours without any advance. The pelvis was perfectly formed, so far as external appearances were concerned, and there was nearly the normal distance between the anterior superior spinous processes of the ilia, and the transverse diameter of the brim was nearly normal, while the antero-posterior diameter scarcely exceeded three inches, necessitating delivery by embryotomy.

The diagnosis in such cases of rachitic distortion is materially aided by a study of the relative proportions of the other parts of the skeleton. If the proper relation between the lengths of the bones of thigh and arm, and those of the leg and forearm, is destroyed, or if the normal proportion between distances from the acromion to the extremity of the middle finger, and from the upper margin of the great trochanter to the heel, is destroyed, rachitic pelvic deformity may almost certainly be diagnosed.

Dewees has stated⁵ that he met with but three cases of severe pelvic distortion during his whole life. Elliot saw⁶ four cases at the Bellevue Hospital in the short space of two months, and states his conviction that the physicians "of the rising generation may expect them in a steadily increasing ratio." That this prediction will be verified there can be but little doubt. The writer has happened to meet with quite a number of labours rendered difficult and dangerous by narrowing of the pelvis, and,

¹ To be published in the Amer. Journ. of Obstetrics.

² Principles and Pract. of Obstetrics, 4to., 1864, p. 386.

³ Theoret. and Pract. Treatise on Midwifery, 8vo., Phila., 1869, p. 626.

⁴ Theory and Pract. of Midwifery, 8vo., Phila., 1862, p. 51.

⁵ Syst. of Midwifery, 8vo., Phila., 1829, p. 32.

⁶ Obstetric Clinic, 8vo., New York, 1868, p. 253.

did he not believe that he had been singularly unfortunate in meeting with such cases, he would say that Elliot's prophecy is being fulfilled with fearful suddenness.

Abdomen.—During the progress of these bone changes, the abdomen, which had before commenced to enlarge, continues to grow more prominent. Several forces operate to produce this. One, the contraction of the thorax, which pushes the liver and spleen downward, has already been alluded to. Another is tympany, which is nearly always present, owing to the weakness and imperfect development of the muscular coat of the intestines. Enlargement of the liver and spleen has been assigned as another cause, and Jenner, in his lectures, from which we have quoted so freely, says that these organs are nearly always affected with albuminoid degeneration. In almost all of these cases, if the disease is at all severe, the edges of the spleen and liver can be felt projecting below the ribs, and sometimes for a considerable distance. But from this it does not follow that they are undergoing any degeneration, nor does it follow that they are enlarged. In many cases of this disease we have been surprised to find them so healthy at the autopsies, and we have almost always failed to meet with Jenner's albuminoid degeneration. About it I can most fully indorse Gee's statement, that, "if frequent, it is rarely fatal; if fatal, it is very unfrequent." Dickinson¹ denies the occurrence of albuminoid changes in rachitis, and states that the alterations in the internal structure of these organs are due to an increase in the fibrous tissue around the vessels; but this is not a constant lesion of the disease, which may prove fatal without any change in the liver and spleen, excepting fatty degeneration of the former.

Pseudo-paraplegia.—There is one form of rickets to which we wish to call special attention. This is the more important, since it is repeatedly mistaken for paralysis, and the helpless infant subjected to a course of medication for disease of the brain or spinal cord.² The child is small, has a large head, and a weak intellect, with the aged expression common to this affection, but there is often very little bone deformity. Indeed, it seems as if the disease had expended itself upon the muscles. The common form of this variety is loss of power in the lower extremities; "pseudo-paraplegia," as it is styled by Gee.³ The muscles are atrophied, and the child unable to stand, but it usually retains power enough to move the

¹ Trans. Medico-Chirurg. Soc., London, vol. lii., 1869.

² Since the above was in press, I have had the opportunity of studying the post-mortem appearances of the spinal cord in a case of this kind. The child, a girl aged four years, had been under observation for two years. She had never been able to walk, and was a typical example of "pseudo-paraplegia." At the autopsy, the brain, spinal cord, and nerves coming from them, were found perfectly healthy, while the muscles of the thigh and leg were greatly wasted and very pale.

³ St. Bartholomew's Hosp. Reports, vol. iv. p. 72.

limbs a little when lying or sitting. The muscles have responded as usual in the few cases in which I have tested them with electricity.

That this condition is due to rickets is proved by the fact that it is preceded by the prodromes of the disorder, is accompanied by beading of the ribs, late dentition, and open fontanelles, and that it may be followed by bending of the bones of the legs when the child has recovered sufficient muscular power to stand or walk. It is important to remember, however, that the condition is often unassociated with any serious, or even with any visible, deformity.

While this disease often terminates fatally, through some secondary disease, it frequently ends in recovery, and, what is most important, this is perfect, providing there is no serious defect about the thorax. It is somewhat important to allude to this point, because the most recent American writer¹ upon the Cæsarean section speaks of the mortality of the operation as being influenced by rachitic diathesis of the woman. This disease has no influence upon the health or the duration of life, if the patient passes beyond a certain age. Indeed, individuals who were rickety in their youth, are sometimes marvels of strength and endurance. I have myself known two such. Hunter² possessed the skeleton of a rachitic dwarf who earned a living by performing feats of strength. Sir Charles Bell speaks of two others;³ and we have the authority of Stanley⁴ for saying that the museum of the University of Bonn contains the skeleton of a male who died aged seventy-seven, and of a female who died aged ninety-four years.

During recovery the bones may become exceedingly thick, and very hard, while the muscles are short, thick, and very firm.

It is a curious and a very important fact that during recovery grave deformities are marvellously diminished, or may totally disappear. I have repeatedly seen a greatly distorted thorax, and a much curved limb, become almost natural in the course of a few months.

ART. II.—*Case of Cicatricial Contractions after Burns involving the Chin and Neck, successfully treated.* By GURDON BUCK, M.D., Surgeon to the late New York Hospital and St. Luke's Hospital, &c. &c. Read at a meeting of the New York Academy of Medicine. (With four wood-cuts.)

ALEX. S., in February, 1869, when two years and one month old, was severely burned from his clothes taking fire while handling lucifer matches. The parts most seriously involved were the chin and front of the neck.

¹ Dr. Harris, in a paper read before the Obstetrical Society of Philadelphia, and published in the *American Journal of Obstetrics* for November, 1871.

² Lawrence, *Lancet*, June 5, 1829.

³ *Lancet*, March 15, 1834.

⁴ *Diseases of the Bones*, London, 1849, p. 230.

Under surgical treatment, cicatrization was completed in the month of June following, when the patient accompanied his family to their summer residence in the country. In October, 1870, when three years and nine months old, patient came under the author's charge, his condition being as follows: A broad cicatricial band of dense structure extends from the inferior border of the chin in a direct line downward to the upper margin of the sternum and clavicle, approximating the chin and sternum to within about two inches of each other, and obliterating the prominence of the chin and the natural front profile outline of the neck. The band extends on the left side of the chin along the border of the jaw to its angle, but on the right side only to a point below the angle of the mouth. Its anterior surface is furrowed and ridged vertically, and a little below its middle is traversed horizontally by a single knotted ridge. At both lateral edges of the band, the adjacent continuous sound skin, which is very supple, recedes and forms a deep pocket behind the band itself, so that the fingers pressing from opposite sides are easily made to meet, with the skin only intervening. When the band is put upon the stretch by elevating the head, the left half of the under lip is drawn down, and with it the lower jaw is kept separated from the upper, permitting the end of the tongue to be habitually exposed to view, and the saliva to escape constantly from the mouth.

Patient also suffers extremely from a tormenting itching, which often suddenly attacks the cicatricial parts, and provokes him to scratch and pull upon the band in an almost uncontrollable manner.

His mother is of the opinion that for several months past the parts have undergone no change. His general health is good.

Fig. 1 shows the patient's condition as just described.

Operation.—With the aid of Prof. A. C. Post, and Drs. C. M. Bell, J. N. Beekman, and Robert Watts, an operation was performed on the 5th November, 1870, as follows:

The patient being under the influence of ether, the entire cicatricial band was divided into three serrated triangular flaps, interlocking each other. One of the three flaps was central, with its apex upward at the symphysis menti; the other two were lateral, with their apices downward and resting on the clavicles. They were formed by two diverging incisions carried from the symphysis downward and outward to either edge of the band at

Fig. 1.



the clavicles. From these terminal points an incision was made along either margin of the band, upward and outward, to the edge of the jaw. The three flaps were then dissected up from the subjacent loose connective tissue, from their apices towards their bases.

Special care was taken to continue the dissection along the base of each flap beyond the limit of the cicatricial skin, and to divide every filament of contracted connective tissue that limited the free movement of the skin on the subjacent parts. The head could now be thrown back and made to move freely in every direction. The next step was to reapply the detached flaps to the extensive raw surface from which they had been dissected up, while the head was at the same time kept elevated and maintained in its natural position. The adjustment of the parts to each other was secured by pin sutures inserted at points where the greatest support was required, and also by numerous thread sutures between the pin sutures.

On the right side of the neck it was necessary to excise a thick fold of cicatricial skin rendered redundant in the new adjustment. On the left side of the neck it was found necessary, in order to relieve tension and facilitate the approximation of the edges of the flaps, to make an incision five inches long through the thickness of the skin across the base of the neck from before backward, on a line parallel with the edge of the wound, and two inches distant from it. The edges of this incision gaped widely apart, and the desired effect was produced. The raw surface resulting from this side incision was coated with lint saturated with collodion, which, on stiffening, formed an artificial scab. A covering of soft lint was spread over the other parts, and strips of adhesive plaster were applied to secure the whole. Though the operation was necessarily protracted, and the loss of blood considerable, there was no extreme depression of the vital powers in consequence. A good degree of reaction followed, and, aided by an anodyne, the patient passed a pretty comfortable night. At the expiration of forty-eight hours sloughing had destroyed all the flaps, except about one inch in breadth along their bases. The sutures were removed in succession, and the sloughs got rid of as fast as they separated. Special care was taken, in dressing the wound, to hold the detached skin, that had escaped sloughing, in close contact with the subjacent surface by means of long strips of adhesive plaster carried high up on either side of the face and over the temples, and on the sides across the nape of the neck. At the same time, the head was also kept well elevated. The wound took on healthy action after the separation of the sloughs, and the patient's general condition was all that could be desired. The detached skin became adherent, and cicatrization progressed favourably. The exuberant growth of granulations was repressed by the energetic use of solid nitrate of silver, not merely passed over the surface, but plunged deep into the substance of the granulations. This was sometimes repeated daily. Caustic potash was also applied, but at much longer intervals, and only at points where the

growth was not sufficiently controlled by the nitrate of silver. At the expiration of about four weeks, when the dimensions of the sore had considerably diminished, a stiff leather stock, protected by a covering of canton flannel, was adapted to the neck and worn constantly, so as to keep the head elevated and oppose the disposition to contraction in the direction of flexion. As cicatrization advanced, the newly formed cicatricial tissue manifested a tendency to develop itself into salient corded bands, which, if left uncontrolled, would have reproduced to a greater or less degree the original deformity. To prevent this effect, the bands were divided at two or more points across their entire thickness, and to a short distance on either side through the neighbouring skin, and deep enough to expose the subjacent loose connective tissue, thus permitting the fresh-cut edges to yawn widely apart. This had the effect of breaking up the continuity of the bands and neutralizing their action. These operations were repeated successively, with the aid of etherization, on the 7th, 12th, and 29th December. The leather stock, worn for the support of the head, proved

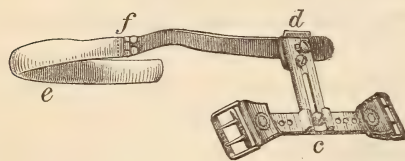
Fig. 2.



after a time objectionable on account of its chafing the skin and producing ulceration. While endeavouring to devise some substitute for the stock, my attention was directed to a brace used by Drs. W. E. Vermilye and C. T. Poore, in the treatment of caries of the cervical vertebræ, which seemed admirably adapted to my purpose. At my request, Dr. Poore adapted one to my patient. On the 21st of January it was applied, and has been worn constantly since, except at night. It consists (see Fig. 2) of two padded steel bands, arranged parallel to each other, one on either side of the spine, and adapted flatwise to the natural curve of the back. It extends lengthwise from the last cervical vertebra to the top of the sacrum.

These vertical bands are joined below by a broad padded metallic band, which passes half round the body behind and just above the hips. At

Fig. 2a.



their upper ends the two vertical bands are joined by a cross-piece, *c*, Fig. 2a, to which a steel ring or collar, *d*, Fig. 2a, of an oval shape, is joined by an upright piece, *c d*, so as to stand horizontally and afford a support in front to the chin. A segment of the ring in front, *e*, where it

corresponds to the chin, is covered with chamois leather, and forms a shelf for the chin to rest upon. On one side, near its middle, the ring has a hinge joint, *f*, which permits it to be opened in two halves, and thus facilitate its removal and reapplication. By means of a screw at the joint over the nape of the neck, a lever action is made to elevate the ring in front and regulate the height of the chin. Two shoulder-straps, *gg*, Fig. 2, and an apron, *h*, Fig. 2, with three straps at either lateral edge, serve to fasten the brace in close contact with the body.

The brace, besides supporting the chin in an elevated position, and thereby resisting the contraction of the cicatricial formation in a vertical direction, exerts, by means of the straps which pass over the front of the shoulders, a constant outward traction upon the skin covering the lower part of the neck and upper part of the chest, the effect of which is also to resist contraction laterally and keep the cicatricial surface flat and smooth. Another important advantage of the brace is, that it compels the patient, whenever he wishes to move his head in any direction, to elevate it so as to clear the chin-piece, or, in other words, by voluntary muscular action to stretch the cicatricial bands. In addition to the brace, patient has worn constantly, night and day, a cravat of canton flannel two fingers wide, secured around and in close contact with the neck by an elastic strap and buckle, for the purpose of holding the new cicatricial surface in contact with the subjacent parts. From its first application the patient has worn the brace uninterruptedly except at night, and so comfortably as scarcely to

restrict his activity or enjoyment. A progressive improvement has taken place in the under lip. It has regained its natural form and functions, and the saliva no longer escapes uncontrolled.

Fig. 3, copied from a photograph taken April 22d, shows the final permanent result.

The contour of the chin and front of the neck is restored to its natural form and dimensions, and the head enjoys entire freedom of motion in all directions. The new cicatricial parts present a stel-

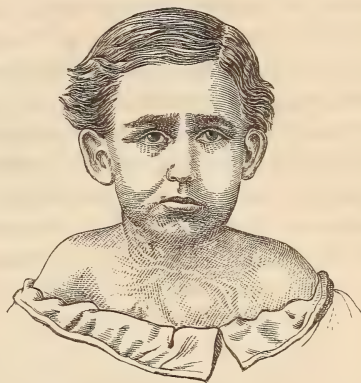


Fig. 3.

lated form, with a centre situated just above the notch of the sternum, from which two prolongations radiate downward, one towards the right, the other towards the left side, extending as low down as the second rib. A third prolongation ascends along the left side of the neck to the angle of the jaw. From the edges of these principal prolongations there are given off smaller ones in diverging directions, the whole resembling the figure of a fern leaf. The cicatricial surface is smooth and flat, and its tissue is supple and movable on the subjacent parts.

Remarks.—The method of treatment which has resulted so successfully in the present case consists essentially in—

1. The excision of the cicatricial tissue, at least of its indurated and nodulated portion (which in this case was effected by the sloughing process), and the complete detachment of the remainder from the subjacent parts, so as to permit freedom of motion and perfect restoration of the natural position.

2. The maintenance of the parts in their restored natural position by the best adapted mechanical appliances, kept up not only during the healing of the raw surfaces, but for a long time, even for months afterwards, until all tendency to contraction has entirely ceased.

3. The repression during the healing process of the new granulation growth, where it tends to be exuberant, by the energetic application of caustics, such as solid nitrate of silver, and solid stick of potash.

4. The free division of the new cicatricial formation wherever it shows a tendency to develop itself into salient corded bands. Each band should be cut across at two or more points through its entire thickness, and the incision extended on either side of the band into the adjacent skin to a short distance, so as to permit the newly divided edges of the cut to yawn

wide apart. These proceedings are in exact conformity to the method laid down and recommended by Dupuytren in his *Lçons Orales*, vol. ii., art. i., p. 66 *et seq.*, Paris, 1832. The late Mr. Henry Earle, of London, at a much earlier period, reported, in vols. v. and vii. of the *Med.-Chir. Transactions*, cases of cicatricial contractions from burns, in which the hand and forearm, and also the neck and jaw, were involved, and which were successfully treated by the same method. Both authors insist on the indispensable necessity of mechanical appliances long continued, to maintain the natural position of the parts and antagonize the persistent tendency to recontraction. Mr. T. H. James, Surgeon to Devon and Exeter Hospital, subsequently to Mr. Earle, reported, in vol. xiii. of the *Med.-Chir. Transactions*, similar cases successfully treated upon the same plan. Mr. James, in a recent pamphlet *On the Results of the Operations for Cicatrices after Burns*, London, 1868, gives his additional experience with brief notes of seven cases that occurred between 1825 and 1846, all of them involving the neck and jaw, and treated successfully. Of the result of most of these cases Mr. James was able to inform himself for years after the treatment, and ascertained the permanence and completeness of the cure. The mechanical support which he employed consisted of an upper arch adapted to the base of the jaw, and of a lower arch adapted either to the sternum and clavicles, or to the upper part of the thorax, as the state of the integuments might require. From the centre of the lower arch was raised a steel frame perforated with a screw, which acted on the upper arch beneath the chin. The two arches were united behind by uprights springing from the lower arch, and furnished with hinges where they joined, so that by working the screw the distance between the two arches might be further increased. Such is Mr. James's description of his supporter, a figure of which is given in his pamphlet, and also in vol. xiii. of *Med.-Chir. Transactions*. The brace used in the treatment of this case, possesses, in the opinion of the author, decided advantages over Mr. James's supporter. It leaves the sore surface free of contact with the brace, allows greater freedom of motion to the head and neck, and can be worn with more comfort by the patient. The author was encouraged to undertake the present case by the complete success of his friend Prof. A. C. Post, in the treatment of a child with cicatricial contractions from a burn, binding the dorsum of the hand in a position of extreme extension and in close approximation to the forearm.

So perfect was the restoration of the parts to their natural position and functions, that the child has since acquired a good degree of proficiency in playing the melodeon.

The author's acknowledgments are also due to Dr. Post for his valuable co-operation in the treatment of the present case, in which he was associated with him in consultation.

Supplementary Report.—The patient continued to wear the brace daily

till he left the city to spend the summer in the country. During the whole month of August the brace was left off entirely, and without any apparent detriment. It was thought, however, a safe precaution to resume its use again, and have it worn two days in the week only, from rising in the morning till dinner-time.

November 15, 1871. The patient was examined to-day, and the favourable condition of the chin and neck already noticed was found to be fully maintained, as well in regard to the freedom of motion of the head and neck as to the appearance of the parts.

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ART. III.—*Strychnia as a Retinal and Optic Nerve Stimulus.* By JULIAN J. CHISOLM, M.D., Clinical Professor of Eye and Ear Diseases in the University of Maryland, Surgeon to the Baltimore Eye and Ear Institute, etc. etc. etc.

SOME months since, Prof. Nagel, of Tubingen, Germany, communicated to the *Centralblatt* an interesting paper on strychnia as a remedial agent in amaurosis, in which he made mention of marvellous effects from the hypodermic use of the alkaloid. He reported cases of both functional and organic diseases of the optic nerve and retina in which relief was prompt, decided, and permanent. In many of his cases improvement in vision appeared to follow upon the very first dose of the remedy; and in a few cases of functional derangement the complete restoration of sight was established after three or four doses of medicine hypodermically administered, making in all only a small fraction of a grain of the sulphate of strychnia.

I was prepared for these striking results in functional disturbances of the optic nerve, commonly called amblyopia, as I had often obtained speedy relief in such cases from the internal administration of strychnia. But organic degeneration of the optic nerve, known as white atrophy, had been so long considered a hopelessly blind state, that, upon reading of the wonderful cures effected by Prof. Nagel through the instrumentality of the hypodermic use of strychnia, I was disposed at first to classify them as among the questionable so-called medical facts, and, before I had experience with the remedy in organic diseases of the retina and optic nerve, considered such reported cases as an evidence of the little value to be attached to marvellous cures of diseases heretofore believed to be incurable. From previous observation it appeared to me nearly as possible to metamorphose old age into youth as to give sight in cases of nerve atrophy.

With the internal use of strychnia as a general nerve stimulus I had long been familiar, and had used it for many years, with most excellent effect, in relieving cases of functional derangement of vision, as seen in night-blindness. Only recently I had been quite carried away by the wonderfully prompt results secured by the hypodermic use of this alkaloid in the treatment of a very protracted case of hemeralopia (night-blindness) of seven months' duration. Notwithstanding a long and carefully instituted treatment by other physicians, the patient remained so absolutely blind after nightfall that he could not detect even a gaslight in full blaze. After a few doses of the sulphate of strychnia injected under the skin of the arm, night-vision was so perfectly restored that at the expiration of ten days the patient could read a newspaper by the gas, when a few nights previously he could not see even the light itself. Three cases of night-blindness of varied duration having presented themselves simultaneously for treatment, and having secured speedy and permanent relief by this hypodermic use of strychnia, I was induced to try the same remedy upon a patient with extensive disease of the choroid and retina, who about the same time presented himself again for treatment, although he had been dismissed some months previously as hopelessly incurable.

The case was that of Capt. T., of the Merchant Service, aged 52. He had suffered from choroido-iritis two years since, for which the operation of iridectomy had been performed in each eye at that time, but without benefit. When he was first brought to my observation, one year after he had been operated upon, I found that he had to be led about, notwithstanding that the enlarged pupils admitted a flood of light to his defective retina. An ophthalmoscopic examination at that time exhibited a vitreous chamber so cloudy that in the right eye no fundus could be detected, and in the left eye the outline of the optic disk could be scarcely defined. Floating muscæ could be seen in numbers in the right vitreous chamber. During a course of treatment extending over some months, I used with him at different times iodide of potassium, bichloride of mercury, iron, cod-liver oil, and strychnia internally, with blisters and setons for counter-irritation. These had the effect of clearing up the vitreous media, but brought back no sight. The case was then dismissed as incurable, as treatment had proved useless. Early in September, after six months' absence, the patient again was brought to me for treatment. Upon examination with the ophthalmoscope, the media being now clear, the choroid and retina exhibited extensive patches of atrophy scattered about the fundus of the eye. The left optic disk looked full, and was of good colour, but with this, his best eye, he could only distinguish light from darkness. He could also discern, as if through a very heavy fog, the outline of large objects in his immediate proximity, when placed in a strong light. He could see the fingers of a hand in motion when placed near his face, but could not count them. The clearing up of the vitreous chamber,

and the exposure of the retina, had brought with them no light, and he was therefore dependent upon others to lead him about.

As the experiences of Prof. Nagel were fresh in my mind, and as the patient was very urgent that I should try any means which offered the least prospect, however remote, of giving him sight, I concluded to put him under the hypodermic use of strychnia, more to satisfy him and get rid of his importunities than for any good results which I could look forward to.

The treatment was commenced before the medical class at the Baltimore Eye and Ear Infirmary, on the 14th of September. One-fortieth of a grain of the sulphate of strychnia in ten minims of water was ordered to be injected under the skin of the arm night and morning. Its effects were immediate. A few minutes after the very first injection, the enveloping fog appeared to him to become less dense, and the surrounding atmosphere to lighten up. Hope revived within him as each successive injection appeared to dissipate more and more the thick mist in which he had been so long groping. After three days' use of the remedy, the patient could make out the furniture of the ward with sufficient clearness to guide himself about without feeling; and on the fourth day of treatment, without help, he succeeded at mid-day in walking alone and safely through the thoroughfares of the city to the home of his family, a mile from the Infirmary.

Six weeks have now elapsed since the hypodermic use of strychnia was commenced, the patient having averaged during that time about three injections in forty-eight hours. The improvement in vision has been steadily progressing from the first day of treatment. He can now make out the large type heading of the daily papers, and every day walks alone through the crowded streets of the city with safety and with confidence, having in this short space of time regained so much useful vision as to make him independent of all aid in moving about. He has used up to the present time nearly two grains of strychnia, and the effects have been as wonderful as in any of the cases related by Prof. Nagel.

In testing the use of strychnia in other cases of optic nerve atrophy, the effects seem nearly instantaneous upon the injection of the fluid under the skin. In nearly every instance the patient experienced the brightening of the light in less than a half minute. In one instance, in which one-fortieth of a grain in solution was accidentally thrown into a vein, the sensations of light and a feeling of muscular twitchings were apparently simultaneous with the emptying of the syringe. Prof. Nagel injected, in his cases, the temple, as near the seat of the eye disease. As the strychnia had first to be absorbed, and could only act upon the nerve centres through the circulation, I could see no advantage in this location over the arm, and hence used this distant but more convenient portion of the body. I commence usually with the one-sixtieth of a grain, which I gradually increase to one-thirtieth, twice a day, in no case exceeding this last

amount. This treatment has now been tried in many cases, doing harm to none, and benefiting all more or less. In functional disturbances the relief is very prompt; in organic troubles of the retina and optic nerve results show themselves more slowly. So far, my experience in the hypodermic use of strychnia enables me to indorse the statement of the wonderful effects secured by Prof. Nagel, of Tübingen, and I can recommend to the profession strychnia, hypodermically used, as a most valuable remedy in many cases of nerve-blindness.

ART. IV.—*Amputation at the Knee-Joint.* By G. M. STAPLES, A.M.,
M.D., Dubuque, Iowa.

THE admirable and exhaustive article of Dr. Brinton on amputations at the knee-joint, published in the No. of this Journal for April, 1868, and the paper of Dr. Markoe in the *New York Medical Journal* for March of the same year, have done much to remove the prejudice against this operation which heretofore prevailed in the minds of American surgeons. But conversions come tardily, in science as in religion, and it is not improbable that, among those who have failed to give it a fair trial, some at least may still look upon the operation with disfavour and suspicion. In this practical age, facts and results are of infinitely more value than speculations; and it is fair to assume that our profession has a claim on its members for their experience, though limited, upon those points not yet fully accepted.

In the following cases, in which the results were all that could be desired, attention is called to a few facts which differ somewhat from the observations of some others who have treated this subject.

CASE I.—I was consulted, May 10th, 1869, by N. L. A., 41 years of age, a tall, sallow man, of bilious temperament. When nine years old, he had fractured left leg and skull. Fracture of leg appeared to unite well, but, for several years after, necrosed bone was discharged through fistulous openings. In June, 1868, patient was called up in the night, and, walking hurriedly across the floor, struck the same limb midway between ankle and knee against a chair. No serious inconvenience followed for a month, when severe periosteal inflammation ensued, with fistulous openings along the leg.

The patient, when I saw him, was greatly reduced; appetite poor; pulse weak, small, and frequent; leg permanently flexed at right angles to thigh, and a large number of openings along limb, from just below head of tibia to a short distance above ankle, with thin, ichorous discharge, and œdema of foot. During the nine or ten months that the discharge

had continued, considerable bone had escaped, and the probe detected denuded bone along the openings, with no attempt at reparation.

Little hope was entertained of restoring the limb to usefulness, and the opinion was given that the patient would have to submit to the loss of his member. Bark, iron, and strychnia were prescribed, with daily injections into openings of solution of carbolic acid. Some improvement followed under above treatment, and during the fall the patient visited the East to consult surgeons in Boston and vicinity, who likewise advised amputation. He returned home in October, and on the 29th, assisted by Drs. Phillips and Lay, of this city, patient was brought under the influence of ether and chloroform. A semilunar incision in front was made, one to one and one-half inch below tubercle of tibia; flap dissected up until cavity was reached; crucial ligaments divided; and, cutting from within backward, the leg remaining flexed, disarticulation was effected, with a short posterior flap. Some difficulty was experienced in securing the popliteal artery, from its retreating within the deep fascia of the popliteal space. Two or three other arteries required ligature; cavity was washed out with a weak solution of carbolic acid; anterior flap dropped down very naturally over end of stump; patella filled up space between condyles; no retraction whatever of posterior integument. Wound was closed with silk sutures, light dressing applied, and patient put to bed, with thigh elevated and flexed upon pelvis, to relax rectus.

Three-fourths of wound closed by first intention, no constitutional irritation followed, and patient rapidly improved. Slough formed over inner condyle, the size of a ten-cent piece, where there was an old cicatrix, but readily filled up. Stump swelled for two weeks, with heat and discoloration; bandages were kept wet with solution of bisulphite of soda in whiskey and water; cicatrix remains in the hollow behind condyles, and out of the way of all pressure; patella movable, but not retracted; and patient could in eight weeks bear entire weight of body upon end of stump. Considerable synovial fluid continues present. In February, 1870, he procured an artificial limb, which sustains the chief part of the weight upon the end of the stump. It was immediately put on, and he has never during the day laid it aside for an hour since, except for some slight repair. There has not been, to the present time, the slightest abrasion or tenderness of the stump. Patient walks easily and rapidly, with but a slight limp; and has been engaged, since March, 1870, in a large boot and shoe store, standing constantly upon his feet from morning till night.

CASE II.—Was called in December, 1870, twelve miles into the country, to see J. H., a pale, greatly emaciated, scrofulous boy, twelve years old, who had been seized, during the preceding summer, with a swelling over the left tibia, which a country physician had lanced a month or two prior to my visit.

Found patient with a rapid, feeble pulse; pale, bloodless look; limb

much enlarged, from serous infiltration, from knee down; watery discharge from opening in lower third; extensive necrosis, allowing considerable flexibility of limb. Ordered bark, iron, and strychnia, with daily injection of the carbolic acid solution; and requested his mother to bring him to town, where he could be more frequently seen.

Early in February he was moved to the city. Little change was observed, except that leg had become considerably curved, and there was evident fracture from necrosis near the upper and lower extremities of the tibia. Treatment, which had been suspended, was renewed, and on the 15th, assisted by Drs. Phillips and McCluer, chloroform was administered to patient, and an exploratory incision made along tibia. Entire shaft was necrosed, with separation at extremities; little or no attempt at repair. It was decided to amputate at the knee, and a long anterior flap was made, point entered, limb flexed, and the knife pushed backward, making a very short posterior flap. A button of cartilage was taken from internal condyle; cavity sponged with weak carbolic acid solution; anterior flap dropped down and stitched; light dressings applied, and patient put to bed. No retraction of integuments occurred. Thigh elevated and flexed, to prevent retraction of patella.

Wound united mainly by first intention. Some synovitis was present, and bandages were kept wet with the soda solution for a week or two. Patient convalesced slowly but satisfactorily under cod-liver oil and iron, and in three months could bear the entire weight of body upon end of stump. No retraction of patella; small amount of synovial fluid present; and the cicatrix is away from all pressure.

The boy has become more fleshy than ever before, and appears in robust health, with the exception of swelling and tenderness of the left radius, which shows signs of periosteal disease, that may require further interference.

In Dr. Brinton's paper, when alluding to the danger of synovial inflammation, he asserts that "in the course of a few days all traces of synovial membrane disappear." It will be observed that in the cases above reported the synovial sac was not wholly obliterated, and it is proper to consider whether the fluid obtained therefrom may not be of much service in deadening the jar which is otherwise in locomotion communicated to the end of the stump.

The Medical Times and Gazette of July 2, 1870, contains an article on amputation through the knee-joint, by C. F. Maunder, Esq., Surgeon to the London Hospital, in which he reports a case, the first one operated upon by him, attended with excessive retraction of the posterior flap, "to the extent of three or four inches;" and he proceeds, with much particularity, to give directions for the operation, especially cautioning all surgeons to expect and provide for great retraction of this flap. In the two cases herewith submitted, not the slightest tendency to this difficulty was manifested. Elsewhere I find no allusion made to it, and, indeed, Dr.

Brinton urges non-retraction of the tissues as one of the arguments in favour of knee-joint operations.

There appears to be much difference of opinion as to the length of the anterior flap. Mr. Maunder directs that it should be not less than two and one-half inches below the tubercle of the tibia. Prof. Gross advises the incision to extend the same distance below the head, while Mr. Pollock, in a paper before the Royal Medical and Chirurgical Society, London, December 14, 1869, thinks it should be at least five inches below the lowest point of the patella. In my cases, I am quite certain the incision extended but a trifle more than an inch below the tubercle, and, as is seen, the cicatrices remain in the hollow behind the condyles, with non-retraction of the patella. If it is a matter of some importance to retain the patella at the end of the stump, may not as short an anterior flap as is practicable and safe, with flexion of the thigh upon the pelvis until union is effected, contribute to this result?

ART. V.—*On Leucin and Tyrosin.* By JAMES TYSON, M.D., Professor of Physiology and Histology in the Pennsylvania College of Dental Surgery; Lecturer on Microscopy and Urinary Chemistry in the University of Pennsylvania, etc. (With two wood-cuts.)

THE organic nitrogenous substances, leucin and tyrosin, have been appropriately classified as proximate principles resulting from the regressive metamorphosis of albuminous matters; for, like creatin, urea, allantoin, and other proximate constituents obtainable from such sources, they are probably not to be found where the albuminous body exists in its freshly-formed state, or where there has been no functional activity, but are the result of the disintegrating processes which are attendant upon such activity; or, possibly, as claimed by some, they may indicate steps in the processes of reproduction or reparation of tissues disintegrated in carrying out their functions. Moreover, both substances may be obtained from nitrogenous tissues which have not undergone decay, by the disintegrating action of strong acids and alkalis.

LEUCIN, represented by C_{12}, H_{13}, NO_4 , and a percentage composition of $C_{54.95}, H_{9.92}, N_{10.68}, O_{24.44}$, is a constant product of the splitting up of albumen, gluten, horn, and, indeed, all albuminoid substances rich in nitrogen, and may be obtained from them in the fresh state, by the action of corrosive alkalis and sulphuric or nitric acid.

It has been studied by Virchow,¹ Frerichs, Städelér, Hoffman, Piria,

¹ Archiv, viii. 337.

Scherer, L. Meyer, Gorup-Besanez, Hoppe-Seyler, and others, and found by them to be a normal and pathological constituent of the most varied solids and fluids of the body, where it is often accompanied by tyrosin; being especially abundant in gangrenous processes in the pancreas and pancreatic fluid, upper part of the small intestine, the spleen, thymus and thyroid glands, salivary glands, lymphatic glands and vessels, kidneys, and supra-renal capsules, brain, and lungs; in the liver in deranged action, in leucocythemic blood, in the blood, urine, and bile of typhus fever and variola (Städeler), in urine during destructive disease of the liver, in cholera evacuations, and various organs of the lower animals—insects, spiders, and crabs. In pus, effete epidermis, thickened toe-nails, sheep's wool, ichthyosis scales, and atheromatous cysts, it is found accompanied by tyrosin, and contributes, according to Hoppe-Seyler, to the offensive smell of unclean parts of the body, and the perspiration of the feet. According to Hermann,¹ it is, in all these situations, except the spleen, the result of decomposition.

But it is in certain affections of the liver, attended by impaired function of this organ, as in acute yellow atrophy or chronic softening, that it assumes a clinical significance, being found, under these circumstances, in the blood and secretions, particularly in the urine, as well as in the substance of the liver, kidney, and spleen. In the former organs, its crystals may sometimes be detected by the microscope.²

Its abundant presence in the liver, under these circumstances, leads us to suppose that this organ is the seat of its destruction, rather than its formation, as some suppose; and the fact that it only or chiefly appears when the function of the liver is deficiently carried out, makes this supposition reasonable; while its elimination at such times by the kidney, analogous to and coincident with the supplemental action of this organ in separating the constituents of bile, affords confirmation of the same view. Dr. Beale has found it in the urine in cases of *chronic wasting* of the liver, with jaundice, and I have also found it abundantly in the urine of a case of atrophic disease of the liver, which continued almost a year before it terminated fatally. As already stated, however, it has been found by Städeler in the urine in cases of typhus fever and smallpox, where deficient action of the liver is not characteristic; though they are both affections in which deranged function of this organ is not necessarily excluded. Most significant in connection with the presence of leucin and tyrosin in the urine is the fact that the urea is greatly diminished.

Mode of Obtaining.—To obtain leucin pure, only the synthetic method is recommended by Hoppe-Seyler. It is as follows:—

¹ Grundriss der Physiologie des Menschen, von L. Hermann, Prof. der Physiologie in der Universität zu Zürich, Berlin, 1870, s. 35.

² Beale, Kidney Diseases and Urinary Deposits, London, 1869, pl. vii., fig. 32, p. 17.

A mixture of valeric aldehyd, hydrocyanic acid, and hydrochloric acid is boiled in a retort until the oily molten valeraldehydate of ammonia has disappeared; then evaporate to dryness. Boil the residue with water and hydrated oxide of lead, filter, remove the lead with sulphuretted hydrogen, evaporate the filtrate in a water-bath, dissolve the residue in hot dilute alcohol, and allow to cool and crystallize.

Hoppe-Seyler also directs its preparation out of the shavings of horn, by boiling, for twenty-four hours, two parts of horn shavings with five of sulphuric acid diluted with thirteen parts of water, frequently adding water to replace that lost by evaporation. Filter, after supersaturating the still hot fluid with milk of lime, and evaporate the filtrate to half its bulk, precipitate the dissolved lime with oxalic acid, filter, and evaporate to crystallization. It is still further purified by boiling with hydrated oxide of lead, and further treating as above directed.

From Tissues or Organs suspected to contain it.—Impure leucin may be obtained, according to the method of Frerichs and Städeler,¹ by promptly saturating the finely-chopped tissues with cold water. The liquid, which now contains the extracted leucin (along with tyrosin), is expressed, filtered, slightly acidulated with acetic acid, and the albumen removed by boiling and filtration. The residue may be again extracted, if desired, to obtain all the leucin present. The clear filtrate is precipitated by a solution of subacetate of lead, filtered, treated with sulphuretted hydrogen to remove all traces of the lead, the filtrate evaporated to dryness, the residue extracted by boiling alcohol, filtered, and again evaporated to the consistency of syrup. If leucin is present, it will crystallize out in a day or more, in yellow spheres and warty masses, and perhaps, also, in glistening plates. These are impure leucin.

As stated, it can only be obtained pure by synthetical means, but, as above obtained, it may be further purified, as directed by Hoppe-Seyler,² by dissolving in ammonia, precipitating with subacetate of lead so long as a precipitate occurs, filter, wash the precipitate with water, pass through the filtrate sulphuretted hydrogen, and filtering out the sulphate of lead, allow the fluid to evaporate to crystallization on a water-bath.

Impure leucin, sufficiently pure for test purposes, may be obtained in the above process after the removal by filtration of the sulphuret of lead, by evaporating the filtrate to a syrupy consistence instead of dryness, and allowing this liquid to stand for some time, when leucin, and later tyrosin, will be deposited in yellow, warty masses. This is, indeed, the method given by Gorup-Besanez,³ who directs that these impure crystals be further

¹ Müller's Archiv, 1856, s. 37. Hoppe-Seyler, Chemischen Analyse, Berlin, 1868, s. 126.

² Op. citat., s. 127.

³ Anleitung zur Qualitativen und Quantitativen Zoochemischen Analyse, Braunschweig, 1871, p. 223.

purified by solution in boiling spirit of wine, at 140–158° Fah., by which the tyrosin will not be taken up, but leucin, after cooling of the boiling, filtered fluid, will be deposited. The two processes are evidently equivalent. It may be still further purified by repeating this crystallization from boiling spirit of wine several times, but, even after it is quite white, it often stubbornly retains a substance containing sulphur. This is removed by Gorup-Besanez by dissolving the purified crystals in a dilute solution of caustic potash, adding a solution of oxide of lead in caustic potash, and boiling for half an hour. The sulphur and lead are then separated by filtration, the solution carefully neutralized with dilute sulphuric acid, and evaporated to dryness over a water-bath. The residue is pulverized, and boiled with spirit of wine at 140–158° Fah.

To Obtain from Urine.—When present in the urine, leucin is extracted in a similar manner. The freshly-passed urine is treated with solution of subacetate of lead, after which the process is as above described.

Frerichs,¹ to whom we are indebted for much of our knowledge of leucin and its clinical significance, recommends that the residue, after evaporation of freshly-obtained urine, be treated with cold absolute alcohol, so long as it takes anything up, with a view of dissolving out the extractives, which often interfere with the crystallization of leucin from urine. The residue is then extracted with boiling common alcohol, which leaves behind a viscous, dark-brown substance, soluble in water, and containing the rest of the tyrosin. The last obtained alcoholic solution, after evaporation and long standing, will deposit leucin in the spheres to be described, which can be subjected to the microscopical and chemical tests. It is better, however, further to purify the leucin, for which purpose its combination with oxide of lead may be resorted to. To this end it is freed from the mother-liquor by pressure between sheets of paper, and dissolved by water; the watery solution of the leucin is made strongly alkaline with ammonia, and then treated with a solution of acetate of lead or subacetate of lead, so long as a precipitate occurs. The leucin-and-oxide of lead thus obtained is collected upon a filter, slightly washed, suspended in water, and decomposed with sulphuretted hydrogen. After filtration, leucin will be deposited in a purer crystalline form.

If the urine contains albumen, it should be coagulated, removed by filtration, and the filtrate used to test for leucin and tyrosin. Moreover, the urine must be used as soon as passed, since leucin, in contact with decaying animal matter, is very easily converted into baldrian or valerianic acid.

Where leucin is abundantly present, however, even the above process is not necessary, simple concentration of the urine causing the crystallization of the yellow spherules and oil-globule-like masses, while I have met them

¹ Klinik der Leberkrankheiten, Band 1, s. 221. Neubauer und Vogel, Analyse des Harns, Wiesbaden, 1867, s. 91.

as urinary deposits in cases of atrophic disease of the liver, where the urine had been subjected to no evaporation whatever.

Microscopical Characters.—When pure, it forms white or platinum-like lamellæ or flakes, glistening not unlike mother-of-pearl, smooth and unctuous to the touch. These, by a hand magnifier, or even to careful scrutiny by the naked eye, exhibit a striated structure; and by a higher magnifying power ($\times 200$ or even less) are seen to be composed of delicate acicular crystals, which occasionally, however, are sufficiently broad to be rod-like, when they exhibit a double contour and considerable refractive power.

As obtained by the coarser methods, however, and by evaporation of urine containing it, as well as when met as a urinary deposit, leucin appears as a peculiarly aggregated, highly refractive spherical mass, generally of a yellow colour; and, on close examination, many spherules seem composed of closely arranged acicular crystals, radiating from the centre of the ball. Often, again, the globules are perfectly hyaline, closely resembling those of oil, from which, however, they may be distinguished in careful study by the fact that they are less refracting, exhibiting a narrower peripheral outline than oil-globules, and also by their peculiar grouping, which is difficult to describe, but which is quite characteristic. In such aggregation there would seem to be a fusion of the adjacent edges of the spheres, as in *a*, Fig. 1, after Beale.

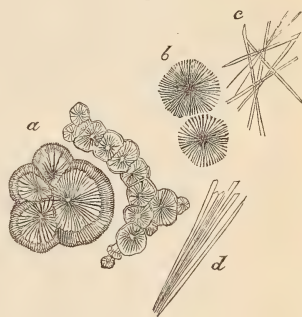
According to Neubauer,¹ these spherules of impure tyrosin also occasionally exhibit a *concentrically* striped appearance, while others here and there are set with fine points. The last form I have also seen, but the concentrically arranged shapes have not come under my notice.

Chemical and Physical Properties.—Pure leucin is tasteless and odourless, has a peculiar “greasy feel,” water scarcely moistening it, but dissolving it readily. It is soluble in about 27 parts of cold water, more easily in hot water. It is even more readily soluble in alkalies, dilute acids, and ammonia; and in concentrated sulphuric and muriatic acids it dissolves without residue. It is with difficulty soluble in alcohol, requiring 1040 parts of cold and 800 of the boiling liquid. In ether it is quite insoluble.

Impure leucin, which is the condition of that almost invariably obtained from animal fluids, is much more soluble in water, and especially in alcohol.

Carefully heated to 170° in a glass tube open at both ends, it sublimes

Fig. 1.



¹ Analyse des Harns, Wiesbaden, 1867, s. 88.

without melting, giving off flaky, woolly masses which float in the air like oxide of zinc. This sublimation is very characteristic of leucin. At a higher temperature (180°) it melts and separates into carbonic acid and amylamine, $C_{12}H_{13}NO_4 = C_2O_4 + C_{10}H_{13}N$. (Neubauer.) Hoppe-Seyler adds ammonia as one of the products.

Leucin resembles exactly glycecol in its relation to acids, bases, and salts, dissolves hydrated oxide of copper without reducing on boiling, and unites with acids to form crystallizable combinations; by the action of nitric acid it is broken up into leucinic acid, water, and nitrogen; by contact with decaying matter¹ it is converted in watery solutions into valerianic acid, $C_{10}H_{10}O_4$, with the formation of ammonia, hydrogen, and carbonic acid, and the same transformation occurs when it is allowed to stand in an alkaline solution, or when heated with caustic potash until it melts.

Pernanganate of potassa changes leucin in an alkaline solution into ammonia, baldrian or valerianic acid, oxalic acid, and carbonic acid.

An aqueous solution of leucin cannot be precipitated by metallic salts, as those of iron, copper, mercury, silver, and lead. Its solutions have no effect on vegetable colours. A solution of nitrate of mercury does not precipitate an absolutely pure solution of leucin. A precipitate thus produced indicates a mixture of tyrosin, especially if the fluid is coloured red or rosy red.

Tests for the Presence of Leucin.—For clinical purposes it is chiefly in the urine that we desire to determine the presence of leucin. If it be sufficiently abundant, as is often the case in acute yellow atrophy of the liver, to occur as a urinary deposit, or to be thrown down on concentrating the urine, the microscope is usually sufficient for practical purposes; and although other substances, as urate of soda, occur in spherules, yet the yellow colour of the spheres, due to the biliary colouring matters also present in the urine, and the radiated structure generally apparent on careful examination, are quite distinctive. Occasionally, however, the more oil-globule-like forms are present, in which the radiated structure of the spherules is wanting. These may be overlooked or be taken for oil, but even here a little careful study will discover a greater solidity of form and resistance to pressure, which will cause them perceptibly to “roll” across the field of view, instead of moving smoothly along as an oil-globule would do. The narrower dark border which sometimes characterizes these structureless globules, while serving to distinguish them from oil-globules, may also possibly lead to mistaking them for red blood disks; but transitional focussing will promptly discover the absence of the reversal of lights and shadows which

¹ Thus Gorup-Besanez and Neubauer (*Analyse des Harns*, s. 89); but Hoppe-Seyler (*Chemischen Analyse*, s. 126) says that under these circumstances it is converted in watery solution into valerianic acid and ammonia by the taking-up of water.

serves to distinguish the disks. Where, as in a case reported by Schmeisser, and referred to by Neubauer (*Analyse des Harns*, p. 91), there is a total absence of colouring matter of the bile, and the spheres, therefore, colourless, and there should be at the same time an absence of their radiated structure, they might readily be overlooked, or mistaken for oil-globules by microscopic examination.

I have never discovered the acicular crystals of leucin as a urinary deposit, as is said by Neubauer to be possible, either before or after evaporation of the urine.

In all instances, however, where absolutely infallible certainty is required, especially where it is desired to determine the presence of leucin in the tissues, one of the processes above described should be resorted to; and when the crystals are obtained, they should be cleansed as thoroughly as possible by pressure between paper, recrystallized from boiling alcohol, and tried by the following tests:—

1. *Scherer's Test*.—A small portion of the deposit is carefully evaporated on a platinum plate with nitric acid. If leucin is present, a colourless, almost imperceptible, residue remains, which, warmed with a few drops of solution of caustic soda, will be resolved into a more or less transparent fluid (Neubauer), according to the degree of purity of leucin (yellow or brown, Hoppe-Seyler); and if further carefully concentrated by heating over a flame, it soon changes into an *oily drop*, rolling about without adhesion on the platinum plate. This is considered a very characteristic reaction, even if the leucin is not quite pure.

2. Heat a portion of the deposit in a dry test-tube over a lamp. If leucin is present, it will be converted on melting into an oily drop, and emit an odour like burnt horn. This test is by no means distinctive, as many nitrogenous substances exhibit this odour on burning.

3. Add not too small a quantity of the deposit to a little solution of sugar of lead, and warm it to the boiling point. To the cooled solution add carefully a little caustic ammonia, and allow to stand. If leucin is present, a deposit of shining crystalline scales consisting of oxide of leucin-and-lead will take place.

Leucin may be obtained very pure from this compound by filtering, washing once with a little water, dissolving in water, adding sulphuretted hydrogen, filtering, and evaporating to crystallization. If pure leucin is there, its sublimation in woolly masses like oxide of zinc is characteristic.

4. If a concentrated solution of muriate of leucin be mixed with a concentrated solution of chloride of platinum, double chloride of leucin-and-platinum will separate in yellow grains, which are quite easily soluble in water, but not at all in alcohol (Gorup-Besanez).

5. The peculiar sublimation of leucin in an open tube at a temperature of 170° , when it gives off flocculent woolly masses, is also characteristic.

TYROSIN, $C_{18}H_{11}NO_6$, of a percentage composition of $C_{59.67}$, $H_{6.08}$, $N_{7.73}$, $O_{26.52}$, is formed in the same manner as leucin, perhaps a little later according to Neubauer, but generally along with it, and by a similar breaking up of nitrogenous matters.¹

It occurs in small quantities, in company with leucin, in the spleen and pancreas of cattle. It has been found, according to Neubauer and Frerichs, in the urine of typhus and smallpox, and is usually believed to be abundantly present with leucin, in the urine of acute yellow atrophy of the liver, where it has been the subject of elaborate investigation by Frerichs. Hoppe-Seyler, however, says (op. citat., p. 128), that it is only in certain cases of softening of the liver that it, with leucin, is abundantly present in the urine, and that in the ordinary cases of so-called yellow atrophy, neither tyrosin nor leucin is met in the urine. So also, according to the same authority, it is not found in the urine of severe typhus and variola, as alleged by others. Without desiring for a moment to array myself against so eminent an authority as Frerichs, it is nevertheless true that in two cases of destructive disease of the liver which have been under my observation, one of which at least was a case of true acute yellow atrophy, and both of which afforded admirable opportunity for the study of leucin, I was quite unable to find any evidences of the presence of tyrosin. The experience of two of my friends has resulted similarly. In the cast-off scales of pellagra, however, in thickened nails and dead epidermis, in the perspiration of the feet, and in atheromatous cysts, Hoppe-Seyler says it has been detected with leucin; also in many lower animals, as a constant product of the decay of albuminous matter; and it is especially abundant in old cheese. To these sources Gorup-Besanez adds the blood of the hepatic and mesenteric veins, the *bile* during typhus, in excrement during croupous bronchial affections, and in the organs of certain lower animals, especially the arthropoda.

To Obtain.—Tyrosin is best prepared by boiling horn shavings with sulphuric acid and water, in the manner described for leucin. After the lime has been separated by oxalic acid, and the filtered fluid evaporated, considerable tyrosin and leucin separate on cooling and standing, and the former may be separated, by taking advantage of the fact that it is much less soluble in water. More explicitly, these mixed crystals are to be treated with so large a quantity of boiling water, that, on cooling, only a small portion of the crystals will separate, which consist of white needles of the more difficultly soluble tyrosin. It may be recrystallized from an ammoniacal solution.

According to Hoppe-Seyler, it may be abundantly obtained from the

¹ In some recent observations (see Quarterly Summary in the present No. of this Journal, from Med. Times and Gazette, Nov. 4, 1871; and New Rep. Pharm., vol. xx. p. 340), Bauer and Voit think it very probable that leucin and tyrosin are among the first products of the decomposition of albumen.

Norwegian "gamle ost," if this be lixiviated with boiling water, precipitated with subacetate of lead as long as a precipitate falls, filtered, the lead separated by sulphuretted hydrogen, and the filtrate evaporated to crystallization; the leucin may then be extracted with dilute alcohol, the residue dissolved in ammonia and allowed to crystallize.

Mode of Obtaining from Animal Fluids and Tissues suspected to contain it.—Here again the preliminary steps are identical with those given for the detection of leucin. It is separated from the latter by treating the mixed crystals with boiling alcohol, in which tyrosin is quite insoluble. The residue may then be dissolved in a very little hot water, and allowed to cool. In twenty-four hours the tyrosin is usually crystallized, and may be purified by frequent recrystallization from boiling water.

According to Neubauer, the urine, in cases of acute yellow atrophy of the liver, often deposits, spontaneously, greenish-yellow sediments, consisting of circular clusters of *tyrosin* needles, and, if evaporated on a glass slide, will deposit numerous crystals of both leucin and tyrosin.

Frerichs¹ obtained a considerable amount of each from urine, procured by the catheter from a case of liver atrophy, by depositing with subacetate of lead the colouring and extractive matters, filtering, removing the excess of lead by sulphuretted hydrogen, and concentrating the clear fluid. In twenty-four hours an amount of tyrosin sufficient for many elementary experiments was deposited (Neubauer and Vogel, p. 91).²

By the same method, we are informed by Neubauer, Schmeisser obtained from urine, in acute yellow atrophy, a large quantity of tyrosin. This urine was free from albumen, and by none of the known reagents could biliary colouring matter be detected.

The tyrosin obtained in all these instances may be crystallized out of hot water, and subjected to the various chemical and microscopic tests.

Microscopical Characters.—Tyrosin forms a cohering, snow-white mass, shining like silk, which is composed of long, shining, contiguous needles, which again are made up of very delicate needles arranged in star-like groups. Fig. 2.

Out of an ammoniacal solution it often crystallizes in spheres, composed of fine, radiatingly arranged needles, and which, from the number of little spear-shaped crystals projecting be-

Fig. 2.



¹ Deutsche Klinik, 1855, No. 31, s. 343.

² In this connection Neubauer also says that here, together with tyrosin, another substance is found, crystallizing in the same form, but containing more nitrogen.

yond the ball, appear jagged. On pressing these beneath the thin glass cover, these spherules of tyrosin break up into fragments consisting of extremely delicate white needles.

Chemical Characters.—Tyrosin is tasteless and odourless, with great difficulty soluble in cold water, but very easily in hot water, still more easily in concentrated or diluted mineral acids and alkalies, and insoluble, on the other hand, in alcohol and ether. It is also soluble in solutions of carbonic alkalies, and even in alcoholic alkaline solutions. It is with difficulty soluble in acetic acid. From ammoniacal solution it is deposited unchanged on evaporation, but in larger crystals. Acids deposit it from alkaline solutions. The crystals are not sublimable, but, heated on a platinum plate, disseminate an odour like that of burnt horn.

Tests for Tyrosin.—1. The microscopic characters of the crystals above detailed, especially under a high magnifying power, may serve to detect it.

2. *Hoffmann's Test.*—Dissolve a small quantity of the suspected crystals in a test-tube, add a few drops of a solution of nitrate of mercury, and heat to boiling. If tyrosin is present, the liquid will soon change to a rosy red, and later a red precipitate takes place.

3. *Piria's Test.*—To a small quantity of the suspected crystals, in a watch-glass, add a couple of drops of concentrated sulphuric acid: it will dissolve with a transient red colour. Warm it moderately, let it stand covered for half an hour, dilute with a little water, saturate the acid with carbonate of baryta, filter, and add a neutral solution of chloride of iron, and a rich violet colour will appear. This reaction is very characteristic, and is caused by the formation of sulphate of tyrosin, the neutral salts of which produce a dark violet colour with chloride of iron. The presence of leucin interferes with this test.

This test is said by Neubauer to be so delicate, that a solution diluted six thousand fold, and placed in a test-tube, will appear bright rosy red; in a two-inch layer, diluted twenty-five thousand fold, and in an eight-inch layer, diluted forty-five thousand fold, a distinct rosy-red colour may be seen.

4. *Scherer's Test.*—When tyrosin is carefully evaporated with nitric acid, oxalic acid is formed, with a yellow substance, which is nitrate of tyrosin. This is coloured a deep reddish-brown by potash and ammonia. If tyrosin is evaporated with nitric acid (sp. gr. 1.2) on a platinum plate, it immediately changes to a vivid orange yellow. On further evaporation, it leaves a glistening, transparent, deep yellow residue, which, if treated with a single drop of solution of caustic soda, assumes a deep reddish-yellow, and, on further evaporation, leaves an intense dark-brown deposit. This test is preferred by Scherer to that of Piria.

5. *L. Meyer's Test* is apparently a modification of Hoffmann's test. If a solution of tyrosin is mixed with a solution of nitrate of the oxide

of mercury, a voluminous yellowish precipitate will take place. If, now, a few drops of fuming nitric acid be mixed with a good deal of water, and this added drop by drop to the fluid under investigation, which is permitted to boil after the addition of each drop, the white precipitate will become dark red. If but little tyrosin is present, the previously milky liquid becomes pale red, and afterwards deposits the dark red flakes, while the supernatant fluid will become colourless.

6. On the application of heat to tyrosin, it gives off the odour of burnt horn; though this can hardly be considered a distinctive test, as leucin and other nitrogenous substances act similarly. Tyrosin does not, however, sublime, as does leucin.

Clinical Significance of the presence of Leucin and Tyrosin.—Although these substances have been found in the solids and fluids of the economy in a number of morbid states, yet, so far as studied, they have only a marked significance when present in the urine in connection with symptoms pointing to derangement of the hepatic function. Under these circumstances they are of grave import, indicating destructive diseases of this organ which have heretofore invariably terminated fatally. As has been already intimated, however, they do not necessarily indicate acute yellow atrophy alone, but may attend any affection of the liver in which there is permanent disorganization of its parenchymatous structure, even if it extend over a period of several months. It does not appear to be present in the urine in cases of liver disease which are perhaps years in completing their course, as in certain instances of cirrhosis, and simple fatty degeneration.

The deficiency of urea in the urine thus containing leucin and tyrosin has already been referred to; and the mode of death usual under these circumstances, with coma or convulsions, or both, attending, can only be rationally explained on the supposition that there exists a condition analogous to uræmic poisoning, or identical with it.

In conclusion, I desire to express my obligations to my pupil, Mr. Merrill, who has greatly aided me in the German literature of this subject, and to my friend Dr. Nancrede, who kindly reproduced the drawings for me.

ART. VI.—*Cases of Cleft of the Hard and Soft Palate, Closed by Operation. Reproduction of Bone in the Palatine Vault.* By WM. R. WHITEHEAD, M.D., of New York, Physician for Diseases of Women at the Northwestern Dispensary; Fellow of the New York Academy of Medicine, etc. (With three wood-cuts.)

CASE I.—The subject of the following case was a little boy, not quite three years of age, who was sent to me by Prof. Charles A. Budd, of this city.

The cleft involved the whole of the hard and soft palate, and was one inch and a half in length, and five-eighths of an inch in its widest part, which part was in the palatine vault, at three-eighths of an inch from its anterior termination.

Operation July 5, 1871.—Present, Drs. F. A. Burrall, E. D. Hudson, Jr., A. Landeta, of Cuba, and Mr. O'Connor, medical student. The patient was etherized, and his mouth kept open with my gag. Just previous to the

Fig. 1.

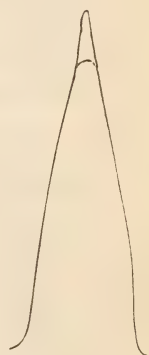


operation, the dimensions of the cleft were minutely measured with a pair of compasses, by my friend Dr. Burrall. His measurements confirmed my own previously made. The size of the cleft is shown at Fig. 1. The manner of doing the operation was such as I have already described (see *American Journal of the Medical Sciences*, July, 1871), and presented no difficulty worthy of note. Indeed, the case gave me less trouble than any upon which I have operated. The little patient reacted well, and the next morning I found him sitting in a rocking-chair. He was singing and rocking himself to and fro, and greeted me pleasantly. Each time it became necessary to examine his mouth, and wash out the side cuts, he struggled, and the gag was required. Five days after the operation, I was called away from the city, and was absent about ten days. Dr. Burrall kindly took charge of the case for me, and at the proper time removed some of the silver sutures. On July 22d I removed all of the remaining sutures, and found the side cuts nearly healed. The union of the parts was complete throughout, except a point the size of a pin's head at the extreme anterior part. It should be mentioned that these side cuts were intentionally kept from closing too soon, by stuffing fresh lint into them every day, until the line of union became quite firm. The denuded bone, as always occurs, was soon covered with a new periosteum, and with abundant granulations. The flaps of muco-periosteal tissue which were slid together at the middle line, were kept in this position with silver sutures, and by the pressure of the lint in the side cuts, until firm union took place. It was in these flaps, or the newly formed vault, that, on the the 16th of October, more than three months after the operation, I detected bone of recent formation. The presence of reproduced bone in this case, was discovered by means of a stout acupuncture needle, pushed with considerable force against the new vault, and along the middle line. If the force which was ineffectually exerted to perforate this newly formed vault, as compared with that which was required to perforate the soft palate along the middle line, where it is quite thick, could be measured with a dynamometer, I should think that the two forces would be in the proportion of twenty to one. It has been alleged that the reproduction of bone in such cases is

not permanent. Such is not absolutely correct.¹ I have, in two cases of patients in this city, allowed more than two years to elapse, and have found that no resorption of the bone has taken place. If, in the present case, the bone had not been permanently formed, there was sufficient time allowed for its resorption. This child is learning to talk. Before the operation he pronounced his own name, which is Johnny, "Gonny." Now the child repeats his name Johnny distinctly, and the mother recently told me that there are some other words which it pronounces better now than before the operation.

CASE II.—Miss P., of Richmond, Virginia, a weak and delicate little girl, æt. 15, had a complete cleft of the hard and soft palate, and was sent to me at the suggestions of Prof. T. Gaillard Thomas, Prof. Wm. Darling, and of Mr. Wm. Branique, a well-known dentist of this city, and also of my friend Dr. F. D. Cunningham, of Richmond, Professor of Anatomy in the Richmond Medical College, who is her family physician. Mr. Branique furnished me with plaster impressions of the mouth taken before and after the operation. Fig. 2 shows the dimensions of the cleft measured from a plaster cast taken before the operation.

Fig. 2.



There were some peculiarities about this case, which made it one of the most tedious and difficult that I have operated upon. The cleft of the palate was originally complicated with a double harelip and an outward projection of the intermaxillary bone. During early infancy a portion of this bone was excised. The gradual approximation of the upper maxillæ caused the two canine teeth to be rather close together. Crowded upward and outward, and concealed high up under the lip, there were two rudimentary incisor teeth, which projected outward, and constantly irritated the lip. The loss of a portion of the intermaxillary bone, and the consequent narrowing of the upper jaw anteriorly, produced such a deformity of it as to make the gag fit badly. But this was not perceived before the operation, and not until during it, and after the gag had been worn about ten minutes. Then it was observed that the narrowness of the upper jaw made the tongue-depressor press the tongue obliquely downward, and crowd it against the epiglottis and threaten suffocation. But already I had cut all the palatine muscles before this difficulty occurred.

Operation August 7, 1871.—Present, Drs. J. C. Nott, Stephen Rogers, F. A. Burrall, J. Clark Thomas, A. Landeta, and Messrs. Wm. and J. W. Branique, dentists. The patient is at all times an exceedingly im-

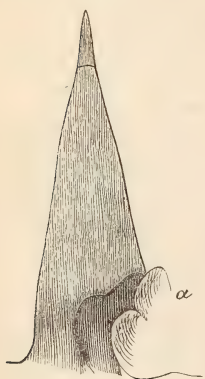
¹ See my Remarks on Reproduction of Bone in the *New York Medical Journal* of June, 1870.

pressionable and nervous young lady, who has been much petted and indulged by her parents. She was etherized and gagged. The muscles were cut when symptoms of threatened suffocation, as already explained, came on, and the gag was removed. The tongue-depressor was filed off, the gag readjusted to the mouth, and the operation completed; but not until after much delay and perplexity in keeping the tongue out of my way. Mr. W. J. Branique rendered me most efficient aid, by kneeling before the patient and keeping the tongue depressed with his fingers during the passage of the sutures. The patient lost, after the operation, some blood, which oozed from one of the side cuts, and ran out of her nose. This bleeding was stopped two or three times, and recommenced again. It was stopped effectively after a few applications of ice-water spray, made very astringent with Squibb's liquor ferri persulphatis.

On the third day after the operation I observed a very small slough near the mesial line, and below the middle of the soft palate. On the fifth day the soft palate partially opened at its lower part; the tonsil of the left side was greatly swollen, and was diseased. On the eleventh day I took out all the silver sutures which remained, some five or six in number.

About four weeks after the operation, Mr. Wm. Branique made a wax impression of the mouth, and from this impression a plaster cast.

Fig. 3.



The black space in Fig. 3 exhibits the extent of the opening which remained in the soft palate at the time that the cast was made, and the letter *a* designates the prominence which still existed at that time, and which was caused by the enlarged tonsil. The whole of the hard palate is firmly united, as well as a part of the soft palate. In this case, with regard to the improvement in speech, it cannot be expected to obtain so satisfactory a result, as would be observed if the union were complete throughout the entire length of the palate. A secondary operation will be required to completely close the opening in the soft palate; but such an operation I would not attempt if the tonsil is at all diseased.

Dr. Cunningham, from whom I recently received a letter in reference to this case, has not yet had a suitable opportunity to make the needle test for the presence of bone in the new vault. He makes the following statement, in a letter dated October 16, 1871:—

“The palatine vault is now apparently complete, except a small orifice on the median line at the anterior extremity of the line of union, which, otherwise, seems to be perfect. She has evidently improved in speech; but not so much as would be the case if she were properly exercised.”

In a subsequent letter, dated October 26, he writes as follows :—

“I introduced a needle at two points along the median line of the vault, and, although there was great resistance and toughness of the tissue, I did not recognize positively the presence of bone at the points that the needle penetrated. Owing to the extreme timidity of the little girl, I think it hardly possible to make a satisfactory examination without ether or chloroform; but I am satisfied that the *density* of the tissues over the previous gap is much increased since her return, and, as a consequence, the elasticity is diminished. The general condition of the mouth and pharynx is now good, and the general health of the patient improving.”

He has kindly promised to make another examination in a few weeks, and keep me informed as to the development of bone in the new vault. I am sure that the excessive nervousness of the young lady quite prevented Dr. Cunningham from pushing the needle with sufficient force against the vault. As an illustration of the thoroughness with which I think the test for the presence of bone should be made, I will quote the following letter, which was published in a supplementary note to my Report on Cleft Palate in the *Transactions of the American Medical Association* of 1869 :—

“NEW YORK, September 17, 1869.

“DR. W. R. WHITEHEAD—*Dear Sir*: In compliance with request is inclosed a statement of the results obtained from an examination of two cases which were submitted by you to the operation of periosteal uranoplasty. In the case of Miss S., æt. 15, there has evidently been deposit of bone in the periosteal surface of the flaps, which now form an admirable substitute for the natural hard palate. The point of a sound (Sim's), introduced through the nostril and pressed with some force against the floor of the nasal cavity, conveys no impression to the finger applied to the corresponding part of the buccal surface. A needle, introduced at various points along the cicatrix which indicates the line of union of the flaps, comes into contact with, and, by exercising considerable force, can be made to penetrate, what has certainly all the physical properties of bone.

“In the case of Maria D., æt. 7, the needle introduced along the mesial line gave the same results. The point of the needle appeared to pass about a line through a structure of the density of muco-fibrous membrane, and then come in contact with a more resisting body, which, by the exercise of force, the point of the needle could be made to penetrate so as to be immovably fixed. On withdrawal, it did not bring down with it the whole newly-formed vault, but only a portion immediately surrounding—say a radius of about two lines—and the impression conveyed to my mind was that the palate was formed by the reproduction of bone.

Respectfully yours,

“CHAS. K. BRIDDON, M.D.”

These patients were examined, one immediately after the other. Plaster casts of the mouth of each, taken before the operation, were placed before Dr. Briddon while he was making his examinations.

ART. VII.—*Paralysis of the Trigemini, followed by Sloughing of the Cornea.* By WILLIAM F. NORRIS, M.D., of Philadelphia.

W. McC., aged 42, horse-jockey, came to the clinic of the University of Pennsylvania, September 11, 1871, complaining of an inflammation of the left eye. The patient is pale and emaciated, and has a large epitheliomatous growth at the left angle of the mouth, which he says has existed for several months.

The left eye has been sore only one week, and the conjunctiva now presents a bright red hue, but remains transparent and without granulations. There is slight bulbar chemosis and a punctated keratitis, most marked at the centre of the cornea, which renders it difficult to see the iris except at its periphery. It appears, however, to respond to the stimulus of light, and certainly dilates under atropia.

There is a slight drooping of the eyelid. The eye is mobile in all directions, but has lost its sensibility, and the cornea and conjunctiva may be touched without his evincing any consciousness of it. There is also impaired sensibility both in the skin and mucous membrane of the left side of the nose. The sense of taste seems also impaired, and salt placed on the left side of the tongue is much less promptly recognized than on the right. There is slight paresis of the left facial nerve, and marked deafness on the same side—does not hear a watch on contact, and a tuning-fork held at the vertex is heard only on the right side.

A solution of atropia was instilled into the eye, and a compress bandage applied so as completely to close the lids. This was removed twice daily, to cleanse the eye, and immediately reapplied, to prevent the ingress of dust or other foreign bodies. Notwithstanding these precautions, the inflammation of the cornea progressed, and a small slough formed at its centre, and separated. The minute aperture thus caused was blocked up by the iris, and subsequently showed as a central black spot.

September 20. He for the first time experienced a sensation of dizziness, and found that he could with difficulty walk straight. This feeling, however, soon passed off, and up to date he has driven a pair of horses daily in the park.

October 15. He has been absent from the clinic and confined to the house for the last two weeks, owing to the tumour at the angle of the mouth becoming inflamed and ulcerated. During this interval he has had repeated attacks of dizziness, usually occurring in the afternoon, and causing him to stagger in walking. His gait is now habitually unsteady.

The limbus cornea above and below has become vascular, and next to it is a comparatively clear rim of corneal tissue, which is separated by a sharply-cut groove from the opaque central portion.

The right eye is healthy and emmetropic, $V = \frac{20}{XX}$.

The eye is more inflamed, and there is marked hypopyon.

20th. There is less inflammation, and the pus in the anterior chamber has been absorbed.

On this day Dr. Garretson removed the epithelioma at the angle of the mouth, and the patient passed from my observation. Through the kindness of the former, I learn that on the 24th and 25th there was violent pain in the head, the patient crying out that "it would kill him." On

the 26th the pain was still severe, but was more in the neck and cheek. From this date, although the attacks of pain were much less frequent, and his mind, which had been wandering, became more clear, the patient gradually grew weaker, and on the 21st November died. No autopsy was allowed.

The interest of the above detailed case centres in the fact that, although the patient was seen at an early stage of the inflammation of the cornea, the most sedulous care in cleansing the eye and protecting it from external irritants did not prevent the necrosis and perforation of the central portion of the cornea.

Inasmuch as the views of physiologists as to the influence of the trigemini in the nutrition of the cornea are so diverse, it may be of interest to recapitulate the results of a few of the more prominent experimenters. Herbert Mayo¹ showed that section of the fifth nerve within the cranium produced insensibility of the eye. Charles Bell² recognized the fact that the sensibility of the eyeball was due to the fifth nerve, and maintained, "that when the sensibility is destroyed, although the motions of the eyelids remain, they are not made to close the eye to wash and clean it, and consequently inflammation and destruction of that organ follow." Magendie³ showed that section of the nerve in rabbits produced anæsthesia of the eye and inflammation and sloughing of the cornea. He, and after him Longet, found that section of the nerve anterior to the ganglion of Gasser was more likely to produce this effect than section posterior to it. The latter⁴ attributes the changes which take place in the eye to impaired nutrition, and argues that they cannot be due either to diminished secretion of tears or to the insensibility of the eye, because neither the more complete dryness of the ball after extirpation of the lachrymal gland, nor the prolonged contact of the air in paralysis of the facial nerve, produces the same effects.

Graefe⁵ experimented on rabbits, and found that intracranial section of the trigemini caused insensibility of the ball, and complete opacity of the cornea, which in his experiments never went on to perforation. He maintained that the trigemini are in part a trophic nerve, and that the destructive changes ensuing in the eye are not alone due to insensibility to external irritants, because extirpation of the tear-gland and cutting off both eyelids do not produce the same effect—the cornea remaining transparent. He also adduces pathological cases (in man) in which perforation of the cornea occurred.

¹ Anatomical and Physiological Commentaries, London, 1822, No. 2, p. 5.

² Nervous System of the Human Body, London, 1830, p. 207.

³ Journal de Physiologie Expérimentale, tome iv. pp. 176–183, 1824.

⁴ Anatomie et Physiologie du Système Nerveux, tome ii. p. 161, Paris, 1842.

⁵ Archiv für Ophthalmologie, Band I., Abth. I., s. 306–315.

Snellen¹ cut the trigeminus in rabbits, and found that when he protected the eye, by sewing the yet sensitive ear over it, the cornea remained intact for ten days, but that without this precaution it rapidly clouded. He has since published a case in a middle-aged man, where the eye improved when placed under a stenopaic shell, and the acuity of vision rose from $\frac{20}{CC}$ to $\frac{20}{XX}$. When the protection was removed, it again sank to $\frac{20}{C}$, and immediately improved on its reapplication. He, therefore, argues that the changes in the cornea are traumatic, and not due to any trophic influence of the ganglion of Gasser.

Meissner² holds that the inner fibres of the nerve are more important than the outer, for the preservation of the cornea, because, if the nerve be only partially divided and the former left intact, the cornea, although insensible, does not become opaque.

Schiff³ arrived at much the same conclusions.

Finally, Sinitzin,⁴ from experiments on rabbits, advances the following views:—

1. That extirpation of the superior cervical ganglion of the sympathetic caused congestion of the choroid, and increased the temperature of the eye.

2. That the cornea in the operated side became more capable of resisting external irritants.

3. That, after cutting the trigeminus in front of the ganglion of Gasser, neuroparalytic affection of the cornea does not ensue, if the superior cervical ganglion of the sympathetic be at the same time extirpated.

4. That, after such changes have set in, they become retrograde, and disappear after extirpation of the ganglion.

5. That this is possible, so long as the cornea has not become dry and horny, and that even at this period it arrests further destruction.

6. That ulcerations of the lips and lids also disappear, and that, to allow repair to take place, it is not at all necessary to protect the eye.

ART. VIII.—*Climate in its Relations to the Production, Progress, Amelioration, and Cure of Consumption.* By MANNING SIMONS, M.D., of Charleston, S. C.

THE numerous and complex factors which constitute climate have invariably attracted attention in their relation to health and the production

¹ Virchow's Archiv, 13. Bd., s. 107, 1858.

² Henle and Pfeuffer's Zeitschrift (3), xxix. p. 96 (quoted by Wells).

³ Ibidem, p. 217 (quoted by Wells).

⁴ Centralblatt für Medicinischen Wissenschaften, No. 11, March 18, 1871.

of disease, but it is, perhaps, in their connection with diseases of the lungs and air-passages that their claims to consideration have been investigated with most solicitude.

That the resources of the *materia medica* have failed to produce any direct specific curative effect on consumption is rendered evident on a review of the number of substances which have at various times been lauded as possessing specific powers, and which, on trial, after being tested by that great regulator, clinical experience, have been consigned to obscurity, as incompetent to fill the *rôle* they were expected to perform.

The ancients appear to have realized this fact, and to have sought assistance from change of climate and surrounding influences. We learn that Aretæus recommended sailing; and Celsus enjoined a voyage to Egypt, the pine forests of which are described by Hippocrates as being dry and arid, yet refreshing to invalids. The Romans, among whom consumption was a frequent disease, sought relief in a voyage to Alexandria, or passed a great portion of time on the Tiber.

Laennec, who, with Avenbrugger, first threw a ray of light on the obscurity which enveloped diseases of the chest, and to whom is due the credit of establishing a system by which they could be more accurately interpreted, attached much importance to this mode of treating consumption. In his work on the chest he says :—

“Of all the measures hitherto recommended for the cure of phthisis, none have been followed more frequently by the suspension or complete cessation of the disease than change of situation. It is even probable that the good effects of mineral waters are partly owing to this cause, since we find that these are by themselves of only very dubious efficacy, while many consumptive persons find themselves benefited by a residence in their vicinity, although unable to take the waters either internally or externally.”

In an examination into the merits of climate and surroundings in their influence as a curative agent, it is proper that we should first inquire, somewhat briefly, into some of the causes of this disease which appear most likely to be neutralized in their action by change of air and circumstances.

The general belief of the profession that consumption is hereditarily transmitted, and their entire scepticism, up to a comparatively recent period, as to the possibility of its being developed by other causes in a previously healthy individual who may present a perfectly sound family record, has deprived us to a great extent of observations which might lead us towards the adoption of measures, not only for its prevention, but for its cure or alleviation. Without denying the hereditary predisposition and vulnerability, we must admit that it is in many instances acquired through the agency of causes which induce nervous exhaustion, impoverishment of the blood, and consequent malnutrition, a loss of balance between the processes of destruction and repair which constitute the phenomena of life.

Louis admits that one-tenth part of the subjects who fell under his observation were born of parents, either father or mother, who, according to all appearances, had died of phthisis. He remarks, however, that the proportion of phthisical patients born of parents who died tuberculous is probably below the truth, in his notes. At any rate, there is a margin which must be accounted for by other causes.

The report of the deaths in England and Wales by the Registrar-General, for one year, gives about twelve out of every hundred deaths to pulmonary consumption as the general rate, but in the cities this percentage is very much higher. This difference becomes very striking to us, by the comparison of the mortality produced by the disease in some of the rural districts and cities. In Hertfordshire, the mortality from consumption is 179 in 100,000 annually, 363 in 100,000 in Liverpool, 331 in 100,000 in Manchester, 277 in 100,000 in London, 100 in 100,000 in Norway. (Thorowgood.)

The true explanation of this difference in the mortality of consumption in the cities and country is probably to be found in the sedentary employment of the inhabitants of cities, the close and impure air, the want of sufficient exercise, and, in the poorer classes, absolute want of necessary food and clothing, both as to quantity and quality.

The tendency of an insufficiency of pure air, and a confined atmosphere, vitiated by being breathed by a number of individuals congregated, to produce the malady, is shown by the following table, compiled by Dr. Guy, based upon measurements of the offices of letter-press printers, and the number of compositors working in them, together with the answers of certain simple questions addressed to the men themselves :—

	No. per cent. spitting blood.	Subject to catarrh.
104 men having less than 500 cubic feet of air to breathe	12.50	12.50
115 men having 500 to 600 cubic feet of air . . .	4.35	3.48
101 men having more than 600 cubic feet of air . . .	3.96	1.98

Thorowgood (*Climatic Treatment of Consumption*) states, in respect to the influence of the air of crowded cities, that he has noticed often, during eight years in hospital and dispensary practice, how, among the poorer classes, phthisis has commenced its attack soon after the individual, previously resident in the country, had settled in some of the densely populated regions of London, and that he has been struck, in numerous instances, with the marked improvement which has taken place on the patient leaving town to go for a season into a country district which was even known to be somewhat unhealthy, but where the air was purer and fresher than it could be in the courts and alleys of London.

A very interesting instance of this influence exercised by the insufficient supply of fresh, pure air is to be found in the report of the health of the Royal Navy for the year 1860, in which accounts are given of a form of congestive pneumonia of the apex of the lung, which had much the char-

acter of incipient phthisis, which was attributed to the overcrowding of the men in the berths between decks, the hammock hooks being only fourteen inches apart. Although, in these cases, the symptoms, both general and physical, were suggestive of phthisis in its early stages, yet a great number of those who were invalided rapidly improved when they were removed from the cause, and were able to rejoin the service.

We must not overlook the fact that apes, when confined, soon acquire a disease characterized by deposits in the respiratory organs.

Although we may be freely willing to acknowledge the powers for good possessed by climatic change, yet the choice of a suitable locality is beset with difficulties, rendered more intricate from the varying opinions expressed by men of equal eminence in this respect.

As a preliminary step towards this object, it will be useful to review the distribution of phthisis in the different zones of the earth, and different countries of these divisions.

Dr. Pollock (*Lancet*, 1856), speaking of climate in relation to phthisis, says that there is no region of the earth absolutely free from this disease.

Inquiring as to the character of the climate and atmosphere in which pulmonary consumption is apt to arise and progress, we are at once impressed with the fallacy of the old doctrine that it is particularly common in cold regions; and we are confirmed in our first impressions by further investigations, for we find that whilst in some of the cold and most exposed parts of the globe the disease is almost unknown, there are regions in which, although warm and protected from the injurious influence of cold winds, the disease is frequently encountered, and in its most violent and rapidly fatal forms.

None of the countries of the world have so great an exemption as those which are included within the isothermal lines of 30° and 40° mean annual temperature. In St. Petersburg and Moscow, which have a mean annual temperature of about 38° Fah., in Iceland and Finmark, the disease is comparatively rare, and it is asserted that as we advance northward into Sweden and Norway, pulmonary consumption is less common.

On the other hand, in the south of Europe, in which are situated the most favoured sanatoria for consumptives, in France and Italy, on the northern shores of the Mediterranean, in Malta, and Madeira, the death-rate from this disease is high. (Fuller.) The temperate zone, however, affords to the disease its customary habitat, and the most ample field for its harvest. To such a degree, indeed, is this the case, that it is estimated that at least one-tenth of the population perish by it.

It is a fact deserving of attention, that altitude, together with low barometric pressure, appears to be inimical to the origin of the disease, and it is demonstrated by Fuchs, from an extensive series of data, that in northern Europe phthisis is most prevalent at the level of the sea, and decreases with elevation to a certain point. This is to some extent substantiated

by the observation that at Marseilles, on the seaboard, the mortality is twenty-five per cent.; at Oldenburg, eighty feet above the sea-level, thirty per cent.; Hamburg, forty-eight feet, twenty-three per cent.; while at Eschevege, four hundred and ninety-six feet, it is only twelve per cent., and at Brotterode, eighteen hundred feet above the sea, it is but 0.9 per cent. (Thorowgood.)

Dr. Mühry, a German writer on climates, seasons, and elevations, dwells much on the important influence exercised in the prevention of phthisis, by the free expansion of the lungs, through the respiration of the air of elevated districts. The effect of the breathing of the rarefied air of these regions is to cause expansion of the chest, in consequence of the large volume of air required for the respiratory process. This is rendered evident by the observation that on the table-land of Mexico, situated 3000 to 8000 feet above the sea-level, the air produces a very distressing effect upon those not accustomed to it, whilst the natives, and those who can endure the process which gradually habituates them to it, are described as possessing immensely developed chests. This development is easily understood, for here we have a clear demonstration of the adaptation by nature of means to an end—the organs of respiration being increased in size and functional power to meet the necessity of breathing a large volume of rarefied air in order to obtain enough oxygen to satisfy the demands of the economy.

The next influence to which we desire to attract attention is that exercised by sea-air, and on this point we meet with no less difficulty, and no more unanimity of opinion and accordance of the results of observation, than on those already considered. That the pure air of the open sea acts in a very favourable manner we have excellent authority, but it is not so clear that the air on sea-shores is, as a rule, sanitary in its effect.

Laennec states that many naval surgeons with whom he had an opportunity of conversing informed him that they had scarcely ever known a man become phthisical in the course of a long voyage, and they had frequently seen sailors, whose chests seemed seriously affected at the time of putting to sea, return perfectly well, or with their health singularly improved.

This statement is, unfortunately, not entirely in accord with the observations of others, but, in a modified degree, is sustained even at the present time. Morton, in his illustrations of pulmonary consumption, expresses unreservedly his belief and confidence in its efficacy, not only as a preventive agent, but brings forward an extreme case to substantiate his statement. He says “nothing appears more salubrious to the lungs than the pure air of the sea,” and declares that the cough is surprisingly allayed by it, denying that the vomiting of sea-sickness renders the patient liable to hæmoptysis. In confirmation of these opinions, that the constant inhalation of fresh sea-air, together with the activity and manual labour

incident to the life of a sailor, is to a certain extent inimical to the development of phthisis, we have the fact mentioned by Thorowgood, that in the English navy the mortality from this disease is much lower than in the army, being on an average for all the various stations about 2.3 as the ratio per 1000 of mean force. Louis says:—

“What I have said upon warmth of climate may be applied to sea-voyages, which have been extravagantly lauded, and, perhaps, without just motive, by writers on phthisis. * * * I do not deny the influence of sea-voyages on the progress of phthisis, but I say that such influence has not been demonstrated, and that the question of its reality is one still open for the decision of accurate experience.”

In examining, however, into the influence of sea-coast situations on the mortality from phthisis, we are met by greater difficulties and obstructions in forming an opinion from the different results derived from observations on places which have this locality. Experience has amply proved that a mixture of land and sea air, such as exists on all our maritime situations, is unfavourable to delicate lungs, and especially where there is phthisis, or even a disposition to it. This may result from the sudden and extreme changes of atmosphere in such situations, for it has been observed, that several sea-bathing places in the south of England, protected from the north and east winds, are congenial to pulmonary invalids, whilst places not far distant, but exposed to these winds, exert a decidedly noxious influence.

Dr. Rush states that in Salem, Massachusetts, which is exposed during many months of the year to a moist east wind, there died, in the year 1799, one hundred and sixty persons, of whom fifty-three were consumptive. Dr. Pollock (*Lancet*, 1856) says that “in the West India Islands the disease is met with in its most severe and rapid form;” while Fuller states that along the shores of the Mediterranean, in Malta, and Madeira, to which localities consumptive individuals are commonly consigned, the ratio of mortality among the natives from phthisis equals, and even exceeds, that which obtains in England.

Drs. Coffin and Geddings, in their brochure on the climate of Aiken, S. C., mention that the same fact obtains also on the coast of Africa, and that whilst on the coast of Egypt the disease is quite common, it diminishes as we advance inland, disappearing almost entirely in Upper Egypt.

On the other hand, we have the authority of Walshe, that “islands and coast districts are said to be favourable to the development of phthisis, yet observe, that the natives of the Azores, Madeira, Iceland, the Faroe Islands, Marstrand, and on the coast of Sweden, spots climatically various as their sites, suffer very slightly from the disease;” and, according to Dr. J. E. Morgan, the disease is rare on the northwest coast of Scotland.

After meeting and battling with the hosts of difficulties which obstruct

us in our arrival at a conclusion on this point, we are inclined to adopt the view that those districts most inland, and occupying elevated sites, are blest with a greater immunity than those nearer to the sea and not so elevated in situation.

In summing up the result of the above observations, culled from various sources, we are justified, we think, in making the following deductions :—

1. That phthisis occurs in every zone, and that its origin is not rendered impossible by any conditions of climate of which we have any knowledge.

2. That the disease, contrary to a very generally received opinion, is not more frequent in cold regions, and that a great degree of cold does not seem to favour its production.

3. That the same remark may be made in relation to heat.

4. That of all the influences which are favourable to its development and progress, we must recognize moisture, especially combined with heat.

5. That great variability in the qualities of heat, cold, and moisture are, however, to be recognized as most injurious.

6. That the most inimical influence to the origin and development of the disease is that exercised by the climatic conditions and habits belonging to extreme altitudes.

7. That consumption is, as a general rule, more frequently met with on sea-shores, and diminishes, to a certain extent, in proportion to the distance from these localities.

To nearly all of these statements, however, there are exceptions. In Madrid, according to Walshe, situated 2000 feet above the sea-level, phthisis is common. He further says, that if we attempt to explain the rarity of phthisis in Algiers, and Egypt, and Syria, by the heat and dryness of the air combined, we are met by the difficulty that the East Indies enjoy a somewhat similar exemption, in spite of the marked moisture of the heated atmosphere. In Iceland, where variability holds to a maximum degree, the disease is singularly rare.

We have now to inquire, what practical use can be made of the foregoing observations and the facts stated.

The application of climate as a means of checking the progress and for the cure of consumption is as difficult as it is an important question. It offers a wide field for study, and one as yet cultivated with only uncertain, and in many respects unsatisfactory, results. It is an easier matter to discover and appreciate the small extent of our knowledge in this respect than to improve it, and further progress must be the result of the observations of many independent observers, who have for the basis of their study cases, and offer not merely theoretical inferences from such facts as have here been stated.

It would appear that the difficulty formerly encountered in the intelli-

gent and successful application of climate as a therapeutical agent, has arisen in the expectation and hope of the discovery in climate of a specific which would be similarly suitable for all cases of the disease, and without regard to the progress and the stages which it presents. That this proposed solution of the difficulty is true, is illustrated by the experiment made by the authority of Brompton Hospital, and the fallacy was on that occasion amply demonstrated. In 1865 and 1866, twenty-six well-developed cases of consumption, carefully selected by most able authorities, were sent to winter at Madeira. The report published on the return of these patients showed that two out of the twenty-six returned improved, seven were slightly improved, twelve were no better and no worse, five were made worse, and one died. (Thorowgood.) It is not mentioned, however, whether these cases presented symptoms in common, which would indicate that the climate employed (one warm, mild, and equable) might be considered beforehand as suitable to them all.

It may, therefore, be considered a legitimate inference that a climate possessed of such characteristics as that of Madeira was of beneficial effect on the one hand in certain cases, and *e contrario* decidedly injurious to others, thereby suggesting a more careful inquiry into the particular features of each case of consumption in which it is desired to employ climate as a remedy, either for a cure of the malady or the suspension of its progress, and with the object in view of dividing them into classes distinguished by particular symptoms, and of discovering the varieties of climate most suitable to each.

Walshe divides climate into eight groups, distinguished by different features, which are so varied as to their degree of heat and cold, dryness and moisture, sedative and stimulating qualities, as to induce the belief, *a priori*, that the effect upon the human economy must also be different.

It would seem, therefore, that we must abandon the hope for, and search after, a climate which is possessed of those qualities which would enable it to rank as a specific, but are to regard its effect upon the general economy, its influence upon the integumentary surface of the body, the lungs, and air-passages, the circulation, secretions, digestion, assimilation, and nutrition, which are so entirely dependent upon each other, and on the proper action of which, in harmony, the health depends.

The views of the causes and pathology of consumption have so changed of late years, that the relation of climate and surrounding influences to its prevention more particularly, as well as to its amelioration and cure, has assumed a more important position.

The experience of Laennec now will not serve us, at least in so far as concerns the most favourable period for invoking the aid of climate.

"To many practical physicians," he says, "who are not anatomists, the possibility of a cure taking place after the formation of an ulcerous excavation in the lungs, may seem quite inadmissible. This opinion will in all likelihood appear

quite absurd to those who have paid much attention to morbid dissection. Previously to the knowledge of the true character and mode of development of tubercle, and while consumption was considered simply as a consequence of inflammation of the pulmonary tissue, medical men did not question (any more than the vulgar words) the possibility of curing this disease by a suitable mode of treatment, especially if taken in time and during the first stage of it. M. Broussais still flatters himself with the same hope. It is now, however, the general opinion of all those who are acquainted with the actual state of our knowledge respecting the pathology of diseases, that the tuberculous affection, like cancer, is absolutely incurable, inasmuch as nature's efforts towards effecting a cure are injurious, and those of art are useless.

"Bayle, in particular, advocates the incurability of this disease; he, however, admits the possibility of its being almost indefinitely prolonged. The recent researches, indeed, in England and Germany, have led the best-informed physicians of those countries to the same result. The observation contained in the treatise of M. Bayle, as well as the remarks made in the present chapter on the development of tubercles, sufficiently prove the idea of the cure of consumption in its early stages to be perfectly illusive. Crude tubercles tend essentially to increase in size and to become soft; nature and art may retard or even arrest their progress, but neither can reverse it; but while I admit the incurability of consumption in the early stages, I am convinced from a great number of facts that in some cases the disease is curable in the later stages, that is, after the softening of the tubercles and the formation of an ulcerous excavation."

The opinion just quoted, compared with the views held at the present day, shows an important difference in the treatment of consumption, and especially in the application of climate to this end.

Henry Bennett, whose opinion on this point commands attention and respect from the fact that it is founded upon experience derived not only upon others, but in his own person, announces (*Lancet*) his belief in the curability of consumption in its earlier stages. To this conclusion he was induced by the fact that he had frequently discovered in the dead-house of the Salpêtrière large cretaceous deposits and puckered cartilaginous cicatrices, which to his mind proved undeniably that the subjects, generally old and infirm women, had been consumptive at some antecedent period of their lives, but had recovered and died of other diseases. According to his view of the pathology, the exudation of the so-called tubercular deposit depends directly upon defective nutrition and disease of the blood, and merely bears the relation to the latter of an epiphenomenon. The hereditary predisposition he assigns not to a direct transmission of tuberculous disease from parent to child, but rather to the endowment of the latter by the former with a feeble organization, which possesses but little vital energy, and consequently wants the power of resistance of disease. In such a class the likelihood that the disease may or may not become developed in the course of the life of the individual, is in proportion to the existence or absence of the surroundings necessary to excite the morbid train.

Niemeyer holds that cheesy deposit in the lungs may, and commonly does, result from neglected catarrhal pneumonia or other inflammatory affections in which there is increased cell-formation within the finer bronchial tubes, which extends to the alveoli, and that a considerable proportion of such cases are restored to health, provided the proper treatment be early

resorted to. Tubercle proper, miliary tubercle, he regards, in the majority of cases, as a complication of, and secondary phenomenon to, the condition just described, bearing an almost constant relation to it, and scarcely ever existing without caseous deposits in some portion of the body. He also considers it as the most dangerous complication for a consumptive to become tuberculous. The tendency to this metamorphosis of the products of diseased conditions which usually end by absorption he assigns generally to some organic vulnerability inherent in the individual or acquired under various circumstances.

From the stand-point established by the views, of which the above is a brief and necessarily imperfect *résumé*, there is opened a new field for the application of change of climate and surrounding influences, and an important position is assumed by prophylaxis.

Prophylactic treatment must have for a basis a knowledge of the causes and the pathological conditions which may give rise to phthisis, and advance by the one must be followed by improvement in the other.

The first step, therefore, should be to remove our patients, who are threatened with an invasion by consumption, when this is practicable, from such influences as the breathing of impure air contaminated by large numbers of human beings collected together, as in large cities, to recommend change of employment, if this entails sedentary habits, and the employment of fresh air, and other means which tend to improve nutrition, not waiting for the disease to develop itself, and thus lose the most important move.

Frequently we see instances, in families with a known hereditary predisposition, where some members have perished by the disease which was their birthright, at an early age, whilst brothers and sisters, born under similar circumstances, not only lived to old age, but in vigorous health. These circumstances show that some other influences had been at work to determine the result in the former case, which was averted in the latter, probably by a genial atmosphere, and pursuits which afforded the opportunity for the breathing of fresh, pure air, and exercise.

It has occurred to most practitioners to see cases of pneumonia in which, after all the acute symptoms have passed away, dulness on percussion remained, with some cough, and to observe the rapid removal of the deposit under the influence of change of air and a residence in some country district. So also is the case with many obstinate coughs and bronchial catarrhs, which we know may often result in more serious trouble.

Thorowgood says:—

“ Another set of patients for whom a moderately warm air is essential are those who are convalescent from some acute pulmonary disorder, such as bronchitis or pneumonia. After the former of these complaints there often remains a rather obstinate cough, with difficulty of breathing and want of strength, so that the patient and his friends begin to think asthma, or what appears worse, consumption, is surely impending. So, too, after an attack of pneumonia, I

have known very evident consolidation of lung persist for months, naturally giving just cause for anxiety, and yet this, just as the above detailed sequelæ of bronchitis, will vanish in the most satisfactory way possible, under the influence of a mild, warm, and pure atmosphere." * * *

The relations of scrofula to phthisis are still *sub judice*, but here also, by an early resort to all the means of invigorating and improving nutrition, of which climate is no mean agent, we may yet rescue many from subsequent attacks of phthisis, which, according to the views advanced of late years, may occur as a direct result, through the caseous deposits which are known to occur in the glands in scrofula.

Those who present histories of hereditary predisposition, also offer instances for the trial of prophylactic means. For such cases, it would be advisable to make a change from the severe winter of the colder regions to a milder and warmer climate, where a more or less complete change of habits may be required, and where the moderate character of the season will permit exercise in the open air during a long period, which would otherwise be spent within doors.

Louis mentions a case related to him by Dr. Schedel. In a family which had lost sixteen children in youth, and at the same age, by phthisis, the seventeenth child, sent at a tender age far away from his native country, escaped the disease which had been so fatal to his family. It is especially to this class of cases, and those in the first stage of the disease, that cold, bracing, and stimulating climates are most applicable. In the later stages, patients are generally far too susceptible to cold, and suffer too much from it, in their depressed condition and their low state of vitality, to be subjected to such experiment, although we are aware that instances of success are reported.

In the report on climatology and diseases of Minnesota, a region possessed of a cold, bracing air, said to be also dry (*Northwestern Med. and Surg. Journ.*, August, 1871), we find the following remarks in relation to phthisis:—

“Almost in every instance the profession agree in regard to the beneficial effect of climate and residence in the incipient stage of this disease. In the developed stage, or period of softening and discharge, there is more difference of opinion; a few advise coming here at any stage, others at an early period in the developed disease, while a large number do not recommend a residence here unless there are some peculiarities about the case which would favour such a course. A few qualify the above statement, in that the patients should be marked by debility, anæmia, deranged digestion, and faulty assimilation from other cause; and also an absence of congestive tendency in the system; the argument being, that our climate benefits phthisis only as it favours the processes of nutrition. The opinion is at least a plausible one, for numbers of cases of the developed disease have recovered, and the conclusion is arrived at, that the developed tubercles softened and discharged, the effect of climate on digestion and assimilation was to the arrest of further deposit of tuberculous matter, the cure being wholly due to climate. Those holding this opinion consider a congestive tendency as debarred from residence here, as our tonic atmosphere favours in the outset the condition of further deposit, and also the occurrence of pharyngo-laryngeal and bronchial inflammation. The per cent.

of those benefited in the second stage by residence, is estimated by some as high as eighty, by others much lower, while in other experiences it has been very small, with the disease hastened in progress in those not benefited. * * * The comparatively short course of the disease, in the majority of cases recorded, is a peculiar phenomenon which has been noted by all in the developed stage, when not benefited by residence, that its progress is hastened, runs a rapid course, and is quickly fatal. * * * While every experience must, as a rule, be in favour of our climate in diathesis and incipency, and in early developed disease, it would be better if we should consider its claims in a state of probation or trial."

Dr. S. E. Habersham (*On the Hilly Pine Region of S. C. and Georgia*) quotes from a communication of Dr. Farrar, of St. Paul, Minnesota, warning consumptives in the advanced stages of the disease against seeking relief in that State. He says: * * * "I have yet to learn of a single instance wherein a patient with bronchial or catarrhal disease has been in the least benefited by this climate. Not a few such have consulted me in regard to their cases since my brief sojourn in St. Paul. I invariably send all such, or rather advise them, to spend the winter in South Carolina."

We are justified, therefore, in making the general statement that cold, bracing climates are most applicable to those cases which merely present a predisposition to, or are in the early stages of consumption, and that the disease, in its more advanced stages, is more frequently hurried on to its fatal termination than benefited or ameliorated by a change to such a climate.

In considering the application of great altitudes, we are led to the conclusion that the climate, atmosphere, and habits of such regions are also more suitable to the disease in its earliest stages, or to those individuals who present a tendency or predisposition in that direction. Dr. Weber (*Ranking's Abstract*, July, 1869) describes seventeen cases treated by residence in elevated regions, in fifteen of which he met with satisfactory results as long as the patients remained in the localities. Dr. Weber ascribes, especially, the efficacy to the dryness of soil and air, the one admitting of out-door exercise, the other freedom from foreign elements, and the presence of much ozone, which, increasing the oxidizing power of the air, lessens the amount of inspiration necessary to be performed by the lungs, and thereby giving rest to the diseased organs.

We all find it difficult to reconcile the results of the observations above recited with those of Dr. Mühry. In further continuing the deductions of Dr. Weber, we would naturally expect to find that where a minimum degree of expansion of the lungs is required to obtain an oxidizing agent, in a degree sufficient to answer the demands of the respiratory process, those organs would need but a limited development. We find, however, a different state of things to be in existence in Mexico, where, we are told, the thoracic development is immense. We may account for the discrepancy, on the ground that, in the regions in which the experiments of Dr.

Weber were made, the physical qualities of the atmosphere breathed by his patients are different from those in Mexico. Certain it is, however, that the well-developed chests of the people of the latter place would indicate an exaggerated use of the respiratory organs, and this view is strengthened by the fact that those unaccustomed to the atmosphere experience great inconvenience.

Reasoning, therefore, from our stand-point, we would be inclined to assign more especially a preventive than a curative influence to these elevated regions. Indeed, we would go even further, and be disposed to anticipate a deleterious influence to be exercised on our patients, except those who seek a change of climate as a precautionary measure, or perhaps present themselves in the very earliest stage of the development of the disease.

We recognize as amongst the most frequent and distressing symptoms of the disease which we are now considering (at least in its later stages), rapidity and shortness of breathing, marked by laboriousness. Here we have the integrity of the lungs destroyed, and the respiratory surface diminished in extent.

We have seen that even in health the breathing of the rarefied air of the high table-land of Mexico is distressing to those unaccustomed to it, and we should, consequently, be prepared to expect that an individual with diseased lungs would be even more painfully affected if subjected to the new source of irritation—overwork of his already crippled organs.

As to the application of climate to the already developed disease advanced to its later stages, when cavities have formed, or extensive consolidation exists, we may throw our information into the general statement, that a locality possessing a warm, dry, moderately stimulating atmosphere, free from excessive variations, is, to the largest number of cases of this character, most suitable.

A climate possessed of such advantages as those, Dr. C. T. Williams describes in his work on the climate of the south of France :—

“The chief of these is the amount of sunshine the invalid enjoys for weeks and even months together, when the sun often rises in a cloudless sky, shines for several hours with a brightness and warmth surpassing that of the British summer, and then sinks without a cloud behind the ranges of the maritime Alps, displaying in his setting the beautiful and varied succession of tints which characterize that glorious phenomenon of the refraction of light, a southern sunset. * * *

“Owing to this genial influence, not accompanied, as it is in the most protected of English wintering places, by any sensation of chill or damp, and the chemical effect of which is seen in the tanning of the skin, owing to the freedom of the climate from rapid and constantly recurring changes of frost, rain, mist, and mild weather, the invalid spends the greatest part of the day in the open air, and scarcely knows what confinement within doors means.” * * *

In Aiken, S. C., is found a locality possessed of a climate characterized by dryness, moderate range of temperature, comparatively free from extremes of variation, a mean temperature of 61.69°, a tonic property of

atmosphere, and a position 120 miles from the sea, with an elevation of 600 feet above the sea-level—properties rendering it eminently suitable to this class of cases.

Warm, moist climates, marked by a soft, relaxing air, and moderately high thermometric range, are suitable to a more limited class of cases, characterized by “a tendency to irritability of the skin and mucous membranes, with a liability to intercurrent attacks of inflammation of the air-passages, and, at the same time, fair action of the stomach, liver, and bowels.

“Those who have much languor of system, profuse sweating, excessive expectoration, tendency to biliousness, to hepatic congestion, or to diarrhœa and dysentery, will get nothing but harm from a warm, sedative climate, and must, therefore, by all means avoid it. My own experience leads me to speak favourably of the mild climates for cases of true laryngeal phthisis in its early stages, where there is much hoarseness, or even complete extinction of the voice, with intense susceptibility of the throat to the slightest change of temperature. * * * On the subsidence of all inflammatory symptoms, if there be languor of system and nervous excitability, a more bracing climate will then be indicated.” (Thorowgood.)

Southgate (quoted by Drs. Coffin and Geddings), speaking of the climate of Florida in its influence on consumptives resident of New Smyrna and other points on the Atlantic coast who had contracted the disease at Florida, says :—

“In such, the rapid melting down of the tissues of the lung in the warm months, it has been my painful duty to witness in more than a single instance.”

As to the conflicting statements in relation to the influence of sea-air and sea-voyages, we will not venture a criticism.

It would appear, from what has been said, that the earlier change of climate and surroundings is employed, the greater may be the hope of successful result. Formerly, when it was considered as the *dernier resort*, a patient in the later stages of the disease was sent away, possibly without advice as to the nature of the climate suitable to his condition, and the choice left to his inclination or convenience. The patient himself, looking for and expecting specific effects, takes no greater care against exposures and imprudences, and even relaxes those precautionary measures which he had employed at home under the supervision of his medical attendant.

In his *Clinical Lectures on Pulmonary Phthisis*, Niemeyer, in speaking of the employment of change of the northern winter for a milder climate, says :—

“We must not neglect to urge this sacrifice upon our patients, if their means, etc., allow it, but we must at the same time tell them the truth, in order that they may not believe that the air of the places to which they are sent contains substances peculiarly curable for their lungs. It is only when the patients themselves know on what it really depends, that they live in Nice, Mentone, Pisa, as well as in Algeria, Cairo, Madeira, carefully enough to expect good results. * * * We can risk sending to Nice, Mentone, Pau, etc.,

only those of our patients who, we feel confident, will remain in-doors during bad weather."

A country district or small town should be selected, and the patient should not be allowed to quarter himself in a hotel crowded with those suffering with the same malady as himself, with whom to compare notes as to the symptoms and progress of their disease, thereby producing depression of spirits, which cannot be dispelled even by the hopefulness which is a peculiar characteristic of consumptives.

"We send consumptive invalids," remarks Walshe, "of the most refined ideas and habits, to Rome, in order that they shall enjoy its soft and equable winter temperature. But we forget that we condemn them at the same time to the revolting spectacle of, and poisonous exhalations from, human excreta, in their daily walks through the best and most frequented parts of the town. I remember well, after visiting one of the spots, which, if correctly named, should rank among the most hallowed in the Eternal City, by its associations—the house of Rienzi, "last of Romans"—being forced to return home at once from the violent sickness brought on by the intolerable odours. Can health be found in an atmosphere so mephitic?"

If possible, residence should be obtained in a private family where there is cheerful society, and the attentions and comforts of home may be to some extent obtained. Important it is also that patients should not be sent away while inflammatory complications exist, accompanied by fever. Niemeyer recommends that

"the trial be made of confining for a time strictly to bed patients with so-called signs of a beginning pulmonary tuberculosis. * * * This course of action is most earnestly to be recommended," he adds, "in the *exacerbations which occur* in the course of a chronic pulmonary phthisis under more violent febrile symptoms."

Let the physician bear in mind and carefully consider the responsibility which rests upon him when he sends a patient in the later stages of consumption far away from his home and family. Let him ponder well over the danger that the case may terminate in death, while his patient is in a foreign land, separated from his friends and those bound to him by the ties of relationship and affection.

Death, at all times, and under all circumstances, comes to us clothed in the panoply of dread and undefined horror.

It is this step that fills the soul with awe and trepidation, and if even the soothing hand of near and dear relatives and friends, and the scenes familiarized to our view by constant acquaintance and association, cannot alleviate the pang of the parting spirit, what must it be to die in a strange land, an object of observation and prurient curiosity rather than of sympathy or commiseration, and although oil and wine be poured into the open wound, it is the offering of mere charity, which, however liberal and spontaneous, is infinitely afar off from the gentle solicitude of affection and love.

ART. IX.—*Hæmoptysis in Consumptive Patients.* By D. FRANCIS
CONDIE, M.D., of Philadelphia.

HÆMOPTYSIS, in the description of tubercular consumption given in the books, is very generally enumerated as among the most common of its prodromes, and as a predominant symptom during some period of its course. This, so far as my own experience goes, is an error, and one very liable to mislead those who have not studied with close attention the disease at the bedside of the sick. It is true that the deposition of tubercular matter in the lungs may be preceded and accompanied by hæmoptysis, but by no means so generally as to warrant its being ranked as among the premonitory, much less as a diagnostic symptom of tubercular phthisis.

Of three hundred and sixty-nine cases of tubercular consumption, very full notes of which I have kept, hæmoptysis occurred in eighty-seven (that is, in about 24 per cent.). In two hundred and eighty-two of the cases it neither preceded nor was present throughout the attack. The absence, therefore, of hæmoptysis, is not to be received in any case as an indication of the absence of pulmonary tubercles, nor can the occurrence of pulmonary hemorrhage be received as an indication of a future or present tuberculosis of the lungs.

In the eighty-seven cases of consumption in which pulmonary hemorrhage occurred under my observation, the hemorrhage preceded in forty the first symptom of the deposit of tubercular matter some considerable time—say two, three, five, six, or even twelve months; in some cases, however, it preceded the indications of tuberculosis only a few days, in others, again, it occurred at the very onset, so far as I was enabled to judge, of the tubercular deposit. In twenty-nine cases the hemorrhage occurred at different periods during the progress of the disease, and in its latter stage in eighteen cases in which the presence of cavities in the lungs was detected upon auscultation.

It appears to me—trusting to my recollection, for I regret to say that I have kept no notes by which to verify the fact—that in the form of consumption for which, in a former communication, I suggested the name of *spurious*, hæmoptysis is much more liable to occur than in the tubercular form, as well preceding the attack of bronchitis or pneumonia, at or soon after its occurrence, or in the advanced—chronic—stage, when it has assumed the characteristics which assimilate it with one of tubercular consumption.

As to the cause of the hæmoptysis which is met with in those who are labouring under tubercular consumption, or who are predisposed to an attack of the disease, it varies, according to my observations, in different cases, and certainly at different stages of the disease. In some cases it is

evidently the result of a state of hyperæmia or congestion of some portion, of more or less extent, of one lung or both, the overloaded vessels relieving themselves by a percolation of blood or by a rupture of the coats of one or two of them. In other cases, the hemorrhage is caused by the opening, from ulceration in its neighbourhood, of an artery; in others, again, we have traced it to a slow but constant exudation of blood from the mucous coat of the more minute ramifications of the bronchial tubes. In the latter case, the matter expectorated consists of a mucoid fluid intimately mixed with blood, giving to the sputa a colour like that of the rust of iron—sometimes the sputa have very much the colour and consistence of currant-jelly. So far as I could judge, hæmoptysis from the first-named cause was most generally found to precede the deposition of tubercular matter or to occur in the early stage of tuberculization, or when the circulation in some part of the lungs is impeded by a large cluster of unsoftened tubercle. Hemorrhage from ulceration may occur at any time in the course of the disease, while the bronchial hemorrhage is most generally confined to cases of tubercular bronchitis or pneumonia, though it may be met with in the latter stage of uncomplicated cases of pulmonary phthisis.

Occasionally, the hemorrhage which precedes the attack of pulmonary consumption, or which occurs towards its close, is quite profuse, and has a tendency to recur again and again, at shorter or longer intervals. During the course of the tubercular attack, the hemorrhage met with is seldom to any great extent, and when once it ceases, it seldom returns.

What influence, for good or for bad, the occurrence of pulmonary hemorrhage in cases of consumption has on the latter, the data in my possession are not sufficient to allow me positively to determine. Judging, however, from what facts I have been enabled to collect, I should infer that the influence exercised by the hemorrhage, one way or the other, upon the character or duration of the disease, was by no means very decided. It may be, that a moderate hemorrhage occurring just preceding the development of tubercles may have a tendency rather to retard than to promote such development. On the contrary, however, when the discharge of blood is considerable and repeated, an injurious effect may be anticipated. When hemorrhage occurs during the course of tubercular phthisis, even if only to a moderate extent, it cannot fail, indirectly, to have an injurious effect, by standing in the way of the patient taking that amount of active out-door exercise which is so important an item in the management of all cases of tubercular deposit, and at the period when most benefit is to be derived from such exercise. Profuse hemorrhage from the lungs occurring in the latter stages of tubercular consumption—which fortunately is rarely the case—could not fail by its debilitating effect to accelerate a fatal result.

ART. X.—*Cases of Injury of the Eye.* By GEORGE C. HARLAN, M.D.,
Surgeon to Wills Ophthalmic Hospital.

As the following cases, occurring recently in the practice of the hospital, present some points not frequently met with, they seem of sufficient interest to record.

CASE I.—L. W., æt. 15, about seven months before application at the hospital dispensary, was struck on the closed upper lid of the right eye with a tin horn thrown by a playmate. There was a slight cicatrix on the lid just above its ciliary margin, and an indistinct scar exactly at the corneo-sclerotic junction, occupying its lower and inner third. Not a vestige of the iris remained, the fundus giving a bright red reflex even with diffused daylight.

Ophthalmoscopic examination by the erect image showed the fundus normal, except a slight separation of the retina at the ora serrata at a point corresponding to the cicatrix in the ball; it also showed a high degree of hypermetropia, which, when properly tested, was found to equal $\frac{1}{3.5}$. The catoptric test revealed absence of the lens.

The eye unaided had scarcely more than quantitative vision, but with a stenopaic hole and a $+\frac{1}{3.5}$ glass, No. XXX. of Snellen's types could be read at twenty feet, and some of the letters of No. XX. could be made out.

Adding $+\frac{1}{1.2}$ for accommodation, gave $+2\frac{3}{4}$, with which the smallest type of the text-book could be freely read at one foot.

When a point of light was thrown upon the fundus by means of a convex lens, the retinal vessels and the optic disk could be distinctly seen by the unaided eye, placed as nearly as possible in the line of the emergent rays. This was confirmed by Drs. Hunt, Thomson, and Norris, who examined the case.

The wound of the ball through which the lens and iris were forced out was, of course, not a direct injury, but a rupture by contre-coup. The cicatrix was so indistinct, that it escaped notice until the discovery by the ophthalmoscope of the lesion at the ora serrata directed especial attention to the part.

It is certainly remarkable that so inexperienced an operator as a rough school-boy, with so crude an instrument as a tin horn, could have extracted the lens with a result more perfect than is often attained by the most accomplished operators with the most delicate of instruments.

CASE II.—The day before the appearance of the above case, a man presented himself who had lost the whole of his iris, through a wound of the cornea, except a small triangular piece, with its base at the attached circumference and its apex adherent to the cornea, which had been held by an anterior synechia. The lens was undisturbed.

As the man disappeared before the examination was completed, the case is of little interest except as an illustration of the strange coincidence of unusual cases, which seems almost a law.

CASE III.—I recall from memory a case in which the lens had been dislocated by a blow, in a very myopic patient, with an extensive posterior staphyloma. When the lens, which was dancing about in the vitreous, was thrown out of the line of vision by the position of the head, vision was greatly improved by its absence. He was quite proud, for instance, of being able to see, with great distinctness, a fly upon the ceiling, which he had never done in his life before.

CASE IV.—A boy twelve years of age, employed in a type-foundry, was brought to the hospital about two weeks ago, just after some of the molten metal had been splashed into his eye.

The lids were partially open, showing plainly the nature of the injury. A little process of the metal projected through the commissure, and some of the lashes of the upper lid had become involved in it as it hardened. These were cut, and with a strabismus-hook placed under the lower edge of the mass, it was tilted out in the same manner as an artificial eye, and with as much ease. As it was moulded between the ball and the lids, its resemblance in form to an artificial eye was very striking. It measured about six-eighths of an inch in each direction, and weighed seventy-three grains.

Vision was, of course, destroyed, but the ball did not suppurate or the cornea slough. There is now complete symblepharon of both lids, but no indication, as yet, of sympathetic trouble in the other eye.

CASE V.—A few days afterwards, a plumber was engaged in putting up a hitching-post in the street, when some of his melted solder was blown into his eye. He came at once to the hospital, with his eye closed and sealed, the lashes being tightly soldered together. When the lashes were cut, the metal dropped off and the eye was found to be uninjured.

CASE VI.—A boy, 19 years of age, was admitted to the hospital a few weeks ago, to be treated for pain in a blind and shrunken bulb, and sympathetic irritation of the other eye.

Four years before, he had been struck in the eye by a piece of cold steel from a nut-punch. He stated that he had never been quite free from pain since, but that the symptoms of weakness and irritability of the other eye had only commenced a month before. There was a deep cicatrix, a kind of notch, at the upper and inner part of the ball, extending through the ciliary region, which was excessively sensitive, the patient starting, as if from an electric shock, when it was touched. When the injured eye was extirpated, a piece of iron was found imbedded in the orbital tissue. It was an eighth of an inch wide and more than an inch long, and must have passed through the eye to reach its position behind it and at the inner side of the internal rectus muscle. Its surface was rough, and it was held so closely by the surrounding tissue that it was found impossible to remove it until it was dissected out, almost like a piece of bone, from its periosteum. The operation was followed by complete relief.

It is worthy of remark, though not a very unusual circumstance, that the symptoms of sympathetic ophthalmia did not supervene until nearly four years after the injury.

ART. XI.—*On the Abstraction and on the Transfusion of Blood.* By CHARLES C. HILDRETH, M.D., of Zanesville, Ohio.

Abstraction of Blood.—This age is pre-eminently practical. We theorize less and experiment more than our forefathers. Knowledge derived from theory is vague, uncertain; that obtained from experiment, positive, exact, and easily verified. Our specious theories vanish before stubborn facts, like mist before the rising sun. The logic of facts is irresistible, and cannot be controverted. The model physician of the future will be one who has no theory to support; one whose mind is a perfect storehouse of facts derived from careful experiment. His diagnosis (based upon the skilful use of all the “instruments of precision” of modern times) will be clear, accurate, positive. His remedies, the result of observation and experiment, will be prompt, effective, and almost infallible.

With the advance of science (whose motto is always *excelsior*), and in the light of discoveries in physiology, pathology, chemistry, and kindred sciences, our convictions are shaken, our theories are acknowledged visionary, and our practice, not meeting the requirements of the age, is exchanged for something better. If we mistake not the signs of the times, we are on the eve of such a change in regard to the practice of bloodletting. For twenty-five years the lancet has been ignored, its use condemned as perilous or destructive in nearly every disease to which flesh is heir. But we now inquire, Are there no cases in which bleeding is absolutely required? Were our forefathers entirely mistaken in regard to the value of the remedy? Cannot the lights of modern science clearly define the states and conditions in which bloodletting should most certainly be employed? A very successful effort in this direction has recently been made by Dr. Richardson, of London, in a lecture published in the *Medical Times and Gazette* (Dec. 17, 1871). This lecture contains so much that is new and interesting, and so clearly states the principles which should guide us in employing the lancet, that I cannot do justice to the subject without drawing liberally from its pages. Let us first inquire, then, What physiological changes occur in the body while blood is being drawn, and what effect will loss of blood have upon the functions of the organs? In tapping a vein, says Dr. Richardson, we open a reservoir from which the right side of the heart lifts up a column of blood and pours it into the lungs. If we open the jugular, we draw directly from the brain, and thus impress the nervous system more quickly than when we draw from the arm. What phenomena, then, invariably follow abstraction of blood? After a time, as blood escapes, we have a change in the central circulation. The volume of blood is gradually diminished at the right side of the heart; and, of course, also the volume of blood sent through the lungs. What follows? First, irregular breathing, a sense of oppression in the chest, a demand for more air. The balance

between the respiratory and circulatory systems is disturbed. Rapid exhaustion and syncope would follow, if the large veins (deprived of their full supply by the arteries) were not filled for a time, from tributary currents, by influx of water, of chylous fluid, and of returning blood from the large glandular organs of the abdomen. The blood, now receiving more water than in its normal condition, shows increased tendency to deposit fibrin—to coagulate. This is one of nature's wise provisions to arrest hemorrhage. If we continue the bleeding still further, the current of blood is diminished in force and volume. The heart, becoming enfeebled, fails to draw up blood with sufficient force from the large veins, and the blood itself loses its sustaining power. As syncope approaches, we have the pallid face, muscular relaxation, sighing breathing; finally, the brain and large nervous centres, from want of their accustomed stimulus, no longer obey the will, become paralyzed, and deliquium follows. During deliquium, the heart beats slowly and feebly. If the flow of blood is now arrested, the patient may soon revive. If blood, however, continues to flow, the heart will continue in motion long after respiration ceases. In this we see another wise provision of nature to preserve life. The heart is the last organ of the body to die; simply because its muscular walls are first supplied with blood through its coronary vessels, at each contraction of the ventricle. But for this provision, "any case of syncope would be a case of death." During deliquium, we lose all voluntary power and sensibility. So perfect is the anæsthesia, that a breast has been amputated without pain, during syncope designedly induced. Another symptom which invariably attends a definite loss of blood, is convulsion. This sign we trace to loss of nervous control over the muscles. The nerves being paralyzed, while muscular irritability remains, we have the flexors contending with the extensors, and no controlling power to restrain them. By a wise provision of nature, then, we find that in loss of blood, up to and beyond the stage of convulsion, muscles retain their power to contract, when the proper stimulus is applied; and also, that they retain this power many hours after apparent death. Another result which invariably follows a considerable loss of blood is a fall in the temperature of the body. While life continues, under loss of blood, the temperature steadily falls. After death, it may suddenly rise; as it often does, in cases of cholera, typhoid fever, &c. If, then, the abstraction of blood can so distinctly modify the functions of the brain, lungs, heart, and the nervous and vascular system generally, it cannot fail to make itself decidedly felt when skilfully employed in the treatment of disease.

Let us inquire, then, In what states and conditions shall we let blood? First, bloodletting is demanded in any case of over-distension of the blood-vessels, in which *the organs cannot healthily perform their functions, on account of such distension*. Such a case is that induced by stroke of lightning, or electricity. It has been repeatedly proven that bleeding will

restore circulation and respiration, when suspended by lightning, more certainly than any other known remedy. The lower animals, when apparently killed by electric shock from a battery, have been promptly restored by venesection. In certain cases of sunstroke, the remedy is indispensable. When the bloodvessels are over-distended, when we have cerebral congestion with active arterial action, there can be no question about the value of the remedy. There are other cases of sunstroke, in which the cold affusion, and even stimulants, are demanded, with active counter-irritation; and in which bloodletting will do harm. Abstraction of blood is also sometimes demanded in the stage of reaction and congestion which follows shock from mechanical injury; never, however, in the cold stage.

In those cases of acute congestion or inflammation of the lungs and pleura which follow exposure, and the depressing influence of cold, when the vascular system is full, and no typhoid symptoms present, there can be no doubt that one liberal bleeding, if properly timed, will do more than any other remedy to break down the inflammation. Again, there are cases of passive cardiac congestion, from enfeebled right side of the heart, that urgently demand abstraction of blood. In these cases we have great oppression in breathing, the circulation is embarrassed, surface livid, eyes injected, mind disturbed, &c. If the pressure is not taken off the venous reservoir, nature will soon find relief by dropsical effusions into the cellular tissue or large cavities of the body. The prompt relief afforded by even a moderate bleeding, in such cases, proves the value and safety of the practice. Again, bleeding is the most important measure in many cases of apoplectic coma. The remedy applies to cases in which we have fever, and decided fulness of bloodvessels. What, let me ask, will a liberal bleeding accomplish in such a case? First, it will reduce the force of the heart and the volume of blood. Second, it will favour absorption of serum, if that be exuded, and the formation of clot, if blood alone be effused. The theory is therefore correct, and the practice has been commended for centuries. In illustration, I will briefly report a case in point.

Nov. 20, 1869, I saw Mr. R. D., of West Zanesville, in consultation with Dr. Young. We found him in a state of apoplectic coma, with some convulsive action, and fever. He was entirely unconscious, his breathing stertorous, his pulse full and strong, his bronchial tubes loaded with mucus, which he made no effort to expel. Seeing at once the extreme urgency of the symptoms, I advised that he be bled very freely, notwithstanding his habits were decidedly intemperate. With the consent of Dr. Young, this was done immediately. When about thirty ounces had been drawn, he began to show signs of returning consciousness, and could relieve, in part, his bronchial tubes of the accumulated mucus. The cold douche was now thoroughly applied to his head, with good effect. We ordered him, also, an active cathartic, and a large blister to the back of the neck. Next morning we found the patient decidedly convalescent.

I have not a doubt that the large bleeding in this case saved his life; without it, he would have died in a few hours, from apoplectic effusion.

Perhaps there are no cases in which the value of bleeding is more generally acknowledged than in those of puerperal convulsions. When there is decided cerebral congestion, with a full, strong pulse, and the patient undelivered, no remedy seems so certain to save the brain from fatal lesion as free abstraction of blood. It will not do, in such cases, to depend on chloroform, opium, purgatives, diuretics, &c. We must bleed very freely, and deliver as promptly as possible, or we have fatal coma from effusion. There are other cases of eclampsia, in which the constitution is so feeble, and the cause so decidedly uræmic, that the bleeding may be safely omitted, and the case intrusted to milder measures of relief.

In certain cases of acute peritonitis, the remedy is one of extreme value, if properly timed. The same may be said in regard to certain cases of croup, pneumonia, of pleurisy, of acute rheumatism, and that plethoric state so often induced by suppressed menstruation. Bleeding is nature's remedy for congestion and oppression everywhere. She relieves congestion of the brain by epistaxis; of the lungs, by hæmoptysis; of the stomach, by hæmatemesis; of the uterus, by menorrhagia. Why should we so persistently ignore her teachings, and bleed not at all? Is this philosophic? A very valuable remedy has certainly been too much neglected in modern times. Why is this? Simply because most physicians now believe that we have other remedies which accomplish the same results, and are much less spoliative and permanently depressing in character. In very many cases this is strictly true. We have in aconite, veratrum, gelsemium, digitalis, &c., remedies which so depress and control the action of the heart, and so paralyze the nervous centres, that, under their use, fevers and inflammations vanish in a space of time which to our forefathers would appear almost miraculous. We render the fibrin and salts of the blood in inflammation more soluble by saturating them with alkalis. We eliminate broken-down tissue by purgatives and diuretics. We reduce temperature by cold water, externally and internally. In chloroform, taken into the stomach, we have a most admirable remedy for shock, for internal congestion of blood, for protracted chill and nervous depression. But all these remedies combined will not promptly and certainly reduce the *volume of blood when in excess*. They will not relieve the brain when surcharged with blood to the point of apoplectic effusion; they will not relieve the enfeebled or exhausted right heart, when overgorged with blood; they will not relieve the lungs in their vital function of oxygenation, when half their working surface is suddenly lost by congestion; they will not restore the lost balance between circulation and respiration; they will not take off the extreme tension and pressure from the bloodvessels in congestion, in time to save organic tissue from destruction. This post of honour is reserved for prompt and copious abstraction of blood; and hence the great value of the remedy, when skilfully applied. Time will not suffer me to dwell upon the practical use of topical or local abstraction of blood.

In the treatment of various diseases, the profession is ready to admit the remedial power of leeches and cups, of punctures and scarifications. But, instead of occupying time with this branch of the subject, we will now briefly refer to that most interesting operation—

The Transfusion of Blood.—This operation dates back to the sixteenth century. It was first performed upon man in France. For many years the blood of the lower animals was exclusively used for the purpose. The operation in many cases was most signally successful; and in others so quickly fatal, that it was forbidden in France by law, in the year 1668. The celebrated obstetrician and physiologist, Dr. Blundel, of London, did more, perhaps, than any other man, by his writings and experiments, to establish the operation upon a scientific basis. He at first demonstrated that he could, by transfusion, restore to life an animal pulseless and breathless from hemorrhage; and second, that he could sustain life for many weeks without food, by regular injections of blood alone. In 1824 he published seven cases of uterine hemorrhage, in which he transfused human blood, all of which, at the time of the operation, were in *articulo mortis*. Of the seven cases, five recovered. Since the days of Blundel, the operation of transfusion has been steadily gaining in popularity. It has been clearly demonstrated that the blood of one human being, injected into the veins of another, will perform all the functions of normal blood; and that the operation, if carefully done, entails but little danger to life. Recent researches and experiments in Germany and France have given us a long list of maladies in which transfusion has proven more successful than any other known remedy. First on this list we will name extreme exhaustion from hemorrhage. Transfusion has saved life in uterine hemorrhage, in hæmoptysis, in hemorrhage from the stomach and bowels, and in loss of blood from scurvy and purpura hæmorrhagica. Transfusion has saved cases of tetanus and hydrophobia, and prolonged life in stricture of œsophagus. Injection of blood into the umbilical veins has restored life in the asphyxia of the new-born. Transfusion of healthy blood has saved life when the whole circulating fluid has been poisoned by absorption of gases, such as those used for anæsthesia, also the carbonic acid and oxide, the sulphuretted and carburetted hydrogen, coal gas, &c. It has saved life, also, when the nervous system is paralyzed by such poisons as morphia, strychnia, &c., circulating in the blood. The poison, by this measure, is rendered comparatively harmless by simple dilution. Transfusion has proved of great value in cases of anæmia and chlorosis, and in cases of extreme exhaustion from diarrhœa, cholera, or any other cause.

In uræmic poisoning, transfusion has proven curative when all other means failed. In that morbid condition of the blood in which the white corpuscles are so much in excess, called leucocythæmia, it has proven by far the most certain. These are some of the desperate states and conditions in which transfusion has shown itself (I had almost said) the only true remedy.

Life, in many of these cases, has been restored by it, when not one sign of vitality remained, except muscular and nervous irritability, which, by a wise provision of nature, lingers with us after apparent death. Transfusion of healthy blood in such a case is literally "raising from the dead," and hence its startling effect upon those who witness it. If transfusion were as simple an operation as abstraction of blood, it would come into every-day use. Unfortunately, this is not the case. There are difficulties and dangers attending its performance, which deter most physicians from ever attempting it. Some of these objections we will briefly name. First, there is great danger that, with the blood, we inject air into the circulation. As a few cubic inches of air thrown suddenly into the heart will kill almost as quickly as a bullet through that organ, we see the risk we take in using ordinary injecting instruments. Second, there is danger that some part of the blood we are using may coagulate before it leaves the syringe, and that thus we throw emboli into the circulation, which, lodging in the lungs, brain or other organs, may quickly destroy life. Thirdly, there is some little danger of phlebitis following our operation on the exposed vein. This last result, however, has been so seldom witnessed, that practically the danger of the operation is reduced to the injection of air and of coagula. The danger of injecting air can be avoided almost entirely by the careful use of the proper apparatus. The danger of injecting coagula can be entirely avoided by defibrinating all the blood used in the transfusion.

In performing the operation, we must remember that healthy blood will begin to coagulate in less than two minutes after being drawn, and that after six or eight minutes it is very often unfit for use. We must also remember that coagula have often formed in the syringe during use, and thus arrested the operation. For these reasons, *it is much safer, in all cases, to defibrinate the blood before injecting it.* How shall this be done? Blood may be defibrinated very quickly by constantly stirring it, as it flows, with a clean broom-corn brush. In this way it can be effectually defibrinated in from six to eight minutes. It should then be strained through clean linen, to remove all possible coagula, and then thrown into a receiver surrounded by water at a temperature of 108° Fah. As before observed, blood deprived of fibrin proves as promptly restorative in exhaustion as normal blood. Fibrin, when lost, is very quickly supplied by nature. Here it will be well to remember that a pound of blood contains, in health, but about thirty grains of fibrin; so that by the process of defibrination the volume of blood is but slightly reduced. In cases of purpura and scurvy, in which transfusion has proven so valuable in arresting hemorrhage, normal blood would no doubt prove more promptly restorative. In such a case, however, defibrinated blood seems at once to give tone and function to the blood-making organs, so that recovery dates from the transfusion. In cases of extreme exhaustion from dyspepsia, the improvement after transfusion may not be noticed for many days, or not until,

under the renovating influences of a few ounces of healthy blood, digestion, nutrition, and assimilation go on with increased energy. In regard to the quantity of blood required to revive the exhausted patient, we may state that the most careful observers name six ounces as the minimum quantity to produce a permanent effect, and sixteen or twenty ounces as the maximum quantity ever required. Life has been sometimes preserved by injections of two or three ounces only. Such cases are exceptional. Small injections usually yield but temporary relief. Two or three pounds have been often injected with the best results. Human blood should always be used if it can be had, but we should not hesitate to use the blood of the lower animals, if we can do no better. Some of the earliest and most successful experiments were made with the blood of calves, lambs, sheep, &c. The microscope shows but little difference in the ultimate structure of human blood and that of animals of the class mammalia. The component parts being the same, results are equally satisfactory. Shall we select a vein or an artery through which to transfuse? Some recent authors advise the distal end of a cut artery—the radial, for instance. As forcing blood through the capillaries is difficult, and attended by great engorgement of the cellular tissue below, which, in some cases, has resulted in suppuration, erysipelas, secondary hemorrhage, &c., we cannot see why an artery should be preferred to a vein for this purpose. The cephalic and basilic veins are certainly the most eligible points for transfusion. The jugulars should be avoided, on account of increased danger of injecting air.

How shall the vein be prepared to receive the point of the canula? Mader advises that the canula be sharp-pointed, like the hypodermic syringe, and to thrust directly into the vein when distended by ligature. This method is uncertain, and more difficult than the usual incision. Sharp points, inside of veins, give rise to phlebitis. The following method of exposing the vein will probably give the best results, and the least pain to the patient: Let the operator mark the line of incision desired, by a camel's-hair brush dipped in a saturated solution of carbolic acid. When the surface is well whitened by the acid, let him pinch up a fold of integument across this line, thrust a sharp-pointed knife through its base, and cut to the surface. This will lay bare the vein at once. As the anæsthesia from the carbolic acid will be almost perfect, the pain will be but trifling.

The vein being now prepared for the canula, with what instrument shall we transfuse? There are objections to nearly all the instruments invented for the purpose. The ordinary piston syringe, attached to a receiver, with gum-elastic hose and metal point, is too expensive, too liable to get out of order, and is not air-tight, unless carefully made, oiled, and preserved. To the Mader, or hypodermic plan, there are serious objections already stated. Transfusion has been done by hydrostatic pressure alone, through a long glass tube with capillary point. The objections to this

plan are obvious. To the simple syringe of glass or metal there holds the same objection as to all other piston instruments, viz., the great danger of injecting air. A good transfusing apparatus should have the following desirable points: It should be exceedingly simple in structure, and not liable to get out of order from neglect or want of use. It should give the greatest possible security against injection of air. It should have a vessel attached to receive the blood, and keep it warm, while being transfused. It should be so constructed, that the capillary point, once introduced into the vein, need not be removed until the operation is finished. It should have power enough to force along the current, when interrupted. It should be easily cleaned and kept in order. To meet these indications, I have constructed an instrument as follows:—

Taking the gum-elastic apparatus invented for local anæsthesia, I have converted it into a transfusing instrument, by dividing the tubing so as to leave one of the hand-balls in the centre of about two feet of hose. To one end of the hose is attached a funnel-shaped metallic vessel, double-cased, with a tube through which hot water is to be poured between the cases, and also a convenient handle. To the other end is attached a metal capillary point for entering the vein. About five inches from the point is inserted a short segment of glass tubing. This is added that the operator may positively see and know when the blood in the instrument is nearly exhausted, and thus avoid all danger of injecting air. I need not say that, with the patient recumbent, and the apparatus held directly over the arm, air cannot be forced into the vein so long as blood remains in the tube. With the hand-ball we have power enough to force along the current, if hydrostatic pressure alone is not sufficient for the purpose. The apparatus is simple, compact, inexpensive, easily cleaned, and not liable to get out of order. I believe it will meet the indications better than others more complicated. It is true, the glass tube is liable to be broken by careless use, but this objection can be obviated by carrying several of them in the same case with the instrument.

In conclusion, allow me to express the hope that the operation of transfusion may, in the future, be so simplified, and rendered so safe, that it shall never be neglected in those desperate cases of hemorrhage and of extreme exhaustion in which all other remedial measures so signally fail.

ART. XII.—*Case of Transfusion.* By J. E. WINANTS, M.D., Surgeon in charge of City Hospital, Wilmington, N. C.

JAMES R. was admitted to the City Hospital, Wilmington, N. C., April 7, 1871, suffering from a recent amputation of left thigh at middle third.

The wound was in a gangrenous state, very offensive, and filled with worms. After thoroughly cleansing it, and injecting chloroform to destroy the worms, it was dressed with stimulating applications, and the patient, under a generous diet, perceptibly improved until the morning of the 17th, when fever ensued, with unmistakable symptoms of tetanus, and, after a short time, opisthotonos. A stimulating treatment being determined upon, about 4 oz. spr. frumenti, of the lowest grade, were given internally every half hour, until 48 oz. had been administered, and stupefaction produced. In about twelve hours the spasms entirely ceased, and the patient was sleeping quietly. He awoke after twenty-four hours, and expressed himself free from pain and very hungry; with no return of tetanic symptoms. I attribute the beneficial effects of the *common* whiskey prescribed in a great measure to the amount of fusel oil contained therein, as a rectified article, upon being tried, did not produce the same effect. Good diet and stimulating dressings were continued, with prospect of ultimate recovery, until about the 15th of May, when the wound assumed a leaden hue, the fresh granulations disappeared, and the patient was evidently sinking. Upon consultation with Dr. J. Francis King, of this city, we decided, as a *dernier resort*, to try transfusion. Glass tubes, about a quarter of an inch in diameter and eight inches long, bell-shaped at one end and drawn to a fine point at the other, were prepared; a lamb about six months old was procured, and all made ready. The patient, in a comatose state, was taken to the operating-room, and—in the presence of several distinguished gentlemen, and the assistants of the hospital—placed upon the table, where he lay, evidently in a moribund condition, scarcely able to answer when spoken to, with eyes closed, and pulse hardly perceptible. The carotid artery of the lamb having in the meantime been severed, the cephalic vein of the patient was opened, the bell-shaped end of the glass tube was pressed closely against the artery of the lamb, and the blood allowed to flow freely through the tube for a short time, to expel any air that might be contained therein, and then, while still running, the smaller end was quickly inserted in the vein, and held there as long as any pulsation was perceptible, when it was removed, the tube cleansed, and the same operation repeated. After several repetitions, finding that mode did not convey the blood with sufficient rapidity, we had recourse to the following expedient. We placed a tin cup in a vessel of water heated to about 100° Fahr., and allowed the blood from the lamb to flow into the cup so placed, with a view to retain its heat and fluidity, and then, with a one-ounce syringe kept constantly warm, injected about six ounces more into the vein, making fully eight ounces in all. Immediately after the operation, and the wound in his arm being closed, he was asked how he felt, and with eyes wide open, and in a loud, distinct voice, answered “much better;” and, upon being requested, drank about four ounces of milk-punch, and then, to change his position, he raised his body with the assistance of his

well leg to the other side of the bed. At this time a sense of suffocation, with slight nausea, was observed, which soon disappeared, the heat of the body became natural, with pulse full and strong. He soon fell into a quiet sleep, which continued through the night, and the next morning awakened much improved and with a good appetite. Stimulating dressings were applied to the wound, fresh granulations were again thrown out, and, with a liberal diet, the patient continued to improve for about ten days, when symptoms of gastritis manifested themselves, the stomach refused to perform its wonted duties, and the patient sank rapidly, until the night of the fifteenth day after the operation, when he expired.

We consider the transfusion as successful, as it was very evident the patient would not have survived through the night if the operation had not been performed, and, had it not been for the extensive suppurating wound, which acted as a severe drain upon the system, with the addition of gastritis, we have strong reason for believing that a complete restoration to health would have been accomplished.

ART. XIII.—*Gelsemium in the Treatment of Irritable Bladder.*

By W. SCOTT HILL, M.D., of Augusta, Maine.

I FIRST observed the beneficial effects of gelsemium in irritation of the bladder, in a case complicated with gonorrhœa. In this case, the patient, after taking a few doses of a preparation containing the medicine in question, was free from his pain while micturating, and the calls to evacuate the bladder much less frequent. As the other ingredients did not possess this property, I resolved to give it a trial. A case soon presented itself, and it was successfully employed. The five following cases are selected from my notes:—

CASE I.—L. H., æt. 73; farmer; large and muscular; health usually remarkably good. For three or four weeks past has been obliged to void his urine a dozen or more times a day, and five or six times during the night. Passes very little at a time; generally dribbles away; severe smarting pain, both before and after micturating; urine acid. R. Potass. carbon. \mathfrak{z} ij; Potassii bromid. \mathfrak{z} ij; Fld. ext. gelsem. \mathfrak{z} ij; Aquæ destil. \mathfrak{z} iv. M. S.: A teaspoonful three times a day. He immediately began to improve, and continued to do so until cured, which was in one week.

CASE II.—L. S., æt. 29; lumberman. When six years old, received a severe injury in the perineum, with probable laceration of the urethra. Has stricture. A No. 2 sound was arrested near the prostate gland. For several weeks has "been obliged to make water every fifteen or twenty minutes during the day, and from a dozen to fifteen times at night." Pain very severe, and he commonly passes but little urine at

once; sometimes only by drops. Urine acid. He took Potassii bromid. gr. iv; Potass. carbon. gr. iij; Fld. ext. gelsem. ℥x; Aquæ ℥ij; every sixth hour. In one week he came into the office and reported himself much better, passing his urine five or six times during the day, and as many more during the night; pain much less. He was subsequently cured. Two months afterwards he had a return of the disease, and was successfully treated with gelsemium alone.

CASE III.—W. B., æt. 64; health usually good; complains of having to void his urine from twenty to thirty times in twenty-four hours; passes very little at a time, and that very slowly, sometimes dribbles; occasionally, whilst micturating, it is suddenly arrested, then commences again. No examination of the condition of the prostate. Years ago, when young, had gonorrhœa, but recovered from it perfectly. Never had any difficulty in passing his water before now. He took a mixture similar to that given in Cases I. and II. The physiological effects of gelsemium were produced in a marked degree by the first few doses, and his disease was ameliorated, and with one-third the dose he soon recovered.

CASE IV.—Mrs. F., æt. 22, has suffered occasionally for the past four years, from excessive pain, of a burning, smarting nature, whilst passing her urine; is obliged to make water very often. The quantity varies from a drachm to an ounce. Never had any treatment for it. Urine pale; not tested. She was ordered Potass. carbon, Potassii bromid., āā gr. v; Fld. ext. gelsem. ℥x; Aquæ ℥ij; every six hours. She experienced the physiological effects of gelsemium. With one-half the dose, she was soon free from her distressing complaint.

CASE V.—Mrs. E., æt. 42, twenty years ago was first attacked with an excruciating pain in voiding her urine; has had similar attacks since then, sometimes lasting for six or eight weeks. The past two weeks it has been very severe, the calls to pass water being frequent both day and night; is often obliged to remain on the chamber ten or fifteen minutes, the urine dribbling away. Her suffering at such times is agonizing. Urine not examined. Potassii bromid. gr. v; Potass. carbon, gr. iv; Fld. ext. gelsem. ℥x; Aquæ ℥ij; was taken every four hours. The first day was much relieved, and was soon well.

In all these cases the same symptoms were present, namely, frequent calls to void the urine, which was small in quantity, often passing *guttatim*, and excessive pain attending micturition. In three cases it was of long standing. In that of Case II. the origin of the disease was traumatic, and no permanent cure was anticipated so long as the stricture remained. In Cases III. and IV., especially the latter, the suffering was very severe. When last seen, there had been no return of the disease in either patient. One source of irritation in all the cases was evidently the acid urine, which was remedied by administering carbonate of potassa. Many nights of disturbed sleep, in addition to the pain, had overtaxed the nervous system, and the bromide of potassium was given as a sedative. The preparation of gelsemium employed was Tilden's fld. ext.

I am aware five cases are not enough to determine the real value of a

medicine in a given disease; but any drug that has been successfully exhibited in as painful a disease as the one under consideration, certainly deserves a trial.

ART. XIV.—*Case of Salivary, or Parotid Fistula.* By T. CURTIS SMITH, M.D., of Middleport, Ohio.

AUGUST 9, 1871, I was called to a daughter of Mr. T., of this place, and was told that when eighteen months old, a large abscess had formed at the site of the parotid gland, and involving its structure. The parents treated this with poultices. When pus appeared near the integument, the father "picked it open with the point of a knife." She soon recovered from the abscess, but was left with a salivary fistula at the point where the puncture was made. This continued to discharge saliva in spite of all treatment that had been adopted prior to the time I saw her. The site of the fistula was opposite the *posterior margin of the gland*, and about *seven lines posterior to the neck of the inferior maxilla*.

For the whole period, seven and a half years, saliva had flowed continually from the fistulous opening, and, during the mastication of food, would run down the neck in quantity sufficient to wet all the garments at the upper part of the chest; or if the head was inclined forward while eating, it would drip rapidly off at the chin. The skin below the fistula was excoriated by the discharge. She was slightly anæmic, and of bad colour of skin, but in other respects healthy.

I examined the duct of Steno with a fine probe, and found it pervious and healthy throughout its entire length, the probe passing readily back to the gland. I then introduced a very fine probe into the fistula, which was about thirteen lines in depth, the point passing obliquely inward and anteriorly. The natural channel, Steno's duct, being open, there could be no objection to closing the fistulous channel by granulation, and without serious operative procedure, should we find it possible to do so. At first I concluded to try mild stimulating applications introduced to the bottom of the fistula, for the purpose of securing granulation. Some cases of salivary fistula have been permanently cured by the simple introduction of the probe into the channel for exploration, the procedure causing sufficient granulation to close the fistula. I was not so fortunate with my case.

The mild applications, after a fair trial, failed to accomplish the desired result. I then dilated the integumentary portion of the fistula, inserted a small silver canula, and injected a solution of argenti nitrat. gr. xx, aquæ destillatæ mxx, into the abnormal channel. This caused severe pain for several hours, and was followed by active inflammation and free suppuration, pus and saliva flowing freely from the fistula. This continued for three weeks, but gradually diminished after the first three days. During all of this time a compress was bound firmly over the gland and fistula. At the end of this period inflammation had ceased, the swelling had disappeared, and the opening continued to discharge saliva in very small quantities *during mastication only*.

On introducing a fine probe at this time, the fistula was found to be but three lines in depth. I then repeated the injection as above, which

caused slight inflammation and the flow of a few drops of healthy pus, after which the fistula closed firmly, leaving a small pit at the site of the former fistula. The erythematous condition of the surrounding skin rapidly disappeared, and the girl is now well, of much healthier hue of skin, more vivacious than formerly, and not a little happy for the relief afforded from a troublesome and disfiguring malady.

I think, that to simply introduce to the bottom of the fistula a fine probe, which had been previously coated with nitrate of silver, would be as effectual a procedure as the methods adopted in the above case.

Reports of cases of fistula similarly located are quite rare, and such cases are, probably, by no means numerous.

ART. XV.—*Cases of Ovariectomy.* By WASHINGTON L. ATLEE, M.D., of Philadelphia. (Reported by J. EWING MEARS, M.D., of Phila.)

CASE 227. *An Ovarian Cyst, lined by a Pyogenic Membrane; Tapped four times, each time of pure pus; Every part of the tumour adherent; Neither clamp nor ligature used, the vessels of the pedicle having been destroyed by inflammation; Emaciation extreme; Recovery.*—July 27, 1870, Dr. Atlee visited Enon, Bullock County, Alabama, to operate on Mrs. W. H. B. She was in the twentieth year of her age, first menstruated at the age of fourteen, and was always regular. She was married at the age of eighteen, was confined nine months before he saw her, had no difficulty in parturition, but four or five days afterwards had a milk chill. Four weeks after her confinement she had an attack of violent ovaritis in the right side, accompanied with chills and fever; and seven weeks after this attack she noticed a swelling in the right iliac region. It was not movable. It rapidly increased in size until it required to be tapped. She had been tapped four times in four months, the last time on the 15th of July. From six to eight quarts of purulent fluid were taken away at each time. After the last tapping she did not rally well from it, and her physicians feared that she would sink after another tapping, which would have to be done very soon. After the last tapping she could seldom be out of bed.

She had always been a fine, hearty, hale girl, weighing 160 pounds previous to this attack. At the time of Dr. Atlee's visit she was extremely bloodless and emaciated, reduced to skin and bone. The tongue was very red; pulse 145, slightly tense and quick; bowels disposed to diarrhoea; appetite good, but the food did not become assimilated.

The patient's abdomen was as large as a woman's at full period of gestation; pretty uniform in shape, though larger on the right than the left side. The whole tumour was dull on percussion. There was a resonant percussion sound over the left side. The abdomen was very tense and tight, elastic, and fluctuating. There was no mobility in the tumour; it seemed to be adherent everywhere. The uterus was central, but pretty well fixed. The sound entered scarcely an inch, and caused much pain.

Diagnosis.—Unilocular ovarian cyst, with extensive adhesions.

No. CXXV.—JAN. 1872.

Prognosis.—Very unfavourable, in consequence of the inflammatory condition of the cyst, both past and present, the extensive adhesions, and the great prostration and emaciation of the patient. The patient, however, insisted upon having the operation performed.

Doctors Caldwell, Banks, Jernigan, Crymes, of Enon, Alabama, and Sandford, of Columbus, Georgia, acted as assistants. After having placed the patient under the influence of an anæsthetic, an incision about two inches long was made in the linea alba, through the abdominal wall, which had evidently undergone inflammation, as the tissue was entirely abnormal. The line of demarcation between the cyst and abdominal wall could not be recognized, so closely were they adherent and incorporated with each other. The trocar was now introduced and several pints of pure pus were drawn off, emptying the cyst completely. The next effort was to break up all adhesions. This was found to be very difficult, as they were very extensive, very vascular, and very firm. They were finally separated from the walls of the abdomen, but still the other portions of the cyst were adherent to everything it touched—the intestines, the uterus, &c.—so that not the least portion of the tumour was free. A large layer of plastic lymph attached the cyst to the intestines, from which the tumour was shelled out, leaving a thick coating of coagulated lymph covering the intestines and protecting them entirely from view. So with the uterus, which was covered by plastic deposits, and could be felt but not seen. Indeed, the whole pelvic cavity was occupied by these inflammatory deposits, so that the other ovary could not be seen. The whole tumour was finally enucleated from this bed of lymph, and remained attached below to a non-vascular membranous pedicle, which was torn off from its attachment, neither clamp nor ligature being employed; it did not bleed, nor could it be traced through the dense body of lymph to the right side of the uterus.

The pelvis and abdomen were now cleaned out; the whole interior surface was ecchymosed and ragged. A small loop of intestine only was visible in the pelvis, all else, both in the pelvis and in the abdomen, was covered from view by a layer of coagulated lymph.

The loss of blood amounted to four or five ounces, and during the operation the pulse flagged slightly at one time, but only for a moment.

The cyst was unilocular, and consisted of the right ovary. It was thick and very fragile, tearing easily, and was lined by a granulated pyogenic membrane. Its weight, with the contents, about fifteen pounds.

The patient was placed in bed on her back, but the spinous processes of the vertebræ were so prominent that bags of cotton had to be placed on each side in order to protect the parts from the pressure of the bed. She was really a living skeleton, and her weight after the operation was supposed not to exceed sixty pounds.

Dr. Atlee remained with her until next morning. When he left, she had had no nausea or vomiting, had passed a comfortable night, and her pulse gradually came down from 145 to 114, and was more voluminous.

The patient recovered without a single unpleasant symptom, and subsequent reports say that she is in the enjoyment of perfect health.

Dr. Atlee makes the following remarks upon this very interesting case: The above case belongs to the second class, and is one of very remarkable recovery. The disease was of a violently acute character from the beginning; was rapid in its progress; was accompanied throughout with a high grade of purulent inflammation; was most exhausting in its effects, rapidly

destroying the vital forces and producing the most extreme emaciation and anæmia. According to the statement of her intelligent physicians, another tapping was likely to prove fatal.

She was an only child of a planter, the wife of a planter, her own child was dead, and consequently she was the only representative of the family. Death seemed to be inevitable, and that in a very few hours, and yet in such an extreme condition the prospects of successful surgical interference were so remote that neither the patient nor the surgeon had anything to hope for. The success of an operation was not at all probable, it was barely possible. Death, without it, was looked upon both by the patient and physicians as certain and impending. What was to be done? The patient decided for herself, and wisely—to *die in the operation for the chance of life which it afforded, rather than die from her disease, which offered no hope*. She was right, and had the surgeon refused to have given her the aid she solicited, he would have been wrong, and would have committed the sin of omission—a transgression of professional law which I fear we are guilty of too often in such extreme and hopeless cases.

CASE 228. *A Peritoneal Cyst of the Broad Ligament, involving the Left Ovary; Tapped once, removing a clear, spring-water-like fluid; Subsequently undergoing inflammation; Incision two inches long; Recovery.*—February 7, 1866, Mrs. L. A., of Baltimore, was brought to Philadelphia to consult Dr. Atlee for an abdominal enlargement. She was thirty-six years old, and first menstruated at the age of seventeen years. The menses were always regular and painful, lasting three or four days. She was married at the age of eighteen years, had one child seventeen years before, and no difficulty in her confinement or afterwards. She nursed her child twenty-seven months, but the menses returned eight months after parturition. She first noticed a swelling in the centre of the hypogastric region in May, 1866, which had gradually increased in size up to the present time. She was as large as a woman at the full period of gestation. All the well-marked symptoms of encysted dropsy existed. No ridges, knobs, or inequalities of surface could be detected. The abdomen was soft and elastic, and was readily fluctuated, as if both the fluid and the walls of the cyst were thin. The uterus was small and movable. The sound entered two and a half inches. The pelvis was free.

Diagnosis.—A unilocular tumour of the ovary, or a peritoneal cyst of the broad ligament.

Treatment.—To be let alone unless graver symptoms arise, and then to be tapped to clear up the diagnosis.

February 29, 1868, the patient was brought to Philadelphia again, suffering intense agony, and having increased in size. Dr. Atlee saw her next day, and found her suffering the most intense pain in the region of the heart; the breathing short and very painful; she could scarcely talk; the pulse frequent and scarcely perceptible; had no sleep for several nights; and could not occupy a recumbent position. He tapped her, with immediate relief, of two gallons of very clear, spring-water-like fluid, uncoagulable by heat or nitric acid. Afterwards she could lie down and was perfectly easy, with full respiration, and a slower and more voluminous pulse.

Diagnosis.—A peritoneal cyst of the broad ligament.

April 25, 1870, the patient called to see Dr. Atlee, and said that after the tapping she had remained perfectly well until January, 1870, when she began to enlarge again. She was about the size of a woman at five months. The tumour was central. There was also granular inflammation of the os and cervix uteri, for which she was receiving treatment.

August 4, 1870, the patient having rapidly increased in size, and becoming again very uncomfortable, came to Philadelphia, desiring an operation for the radical cure of her disease. This was performed in the presence of Drs. Cassady, Mears, W. Lemuel Atlee, Hoffman, and Leake. An incision two inches in length was made through a very thick muscular wall directly down upon the cyst, which was punctured by a large trocar, and several quarts of the same peculiar fluid were drawn off. On drawing out the cyst, it was found to be so much thicker and more vascular than is usually found in such cases, that Dr. Atlee abandoned the original idea of merely taking off a portion, and decided to remove the whole of it. As there were no adhesions, it was readily withdrawn through the small opening. The Fallopian tube was coursing over it and seemed to be embodied in its walls, and the cyst was attached by a short pedicle to the left side of the uterus. The left ovary could not be felt, it seemed to have been atrophied and diffused in the walls of the cyst. Dr. Atlee's clamp was applied, and the pedicle severed. Only a few drops of blood were lost.

The tumour was unilocular, and with its contents weighed seventeen pounds.

The anæsthetic, instead of relaxing the muscular system, threw it into a rigid or cataleptic condition during the whole time of the operation.

Remarks by Dr. Atlee.—The above was one of those peculiar cases which, strictly and pathologically speaking, I cannot designate as ovarian. It originates in the same locality, and partakes of all the rational and physical characteristics of an ovarian cyst, but differs essentially from it in the character of its contents. The fluid, unlike that of an ovarian cyst, is absorbable by the inner surface of the peritoneum, and if it can escape from the cyst into the peritoneal cavity, will, so long as the opening in the cyst remains patulous, not reaccumulate. Hence tapping is frequently followed by a suspension of the disease for a long time, and sometimes by a cure. Hence, also, a rupture of the cyst may also be followed by cure, and no doubt these are the cases usually reported as cases of *ovarian dropsy* cured by rupture.

It is on account of the above reasons that I have advised and instituted a particular operation in these peritoneal cysts of the broad ligament, when tapping fails to cure. The operation referred to consists of making a small opening through the abdominal wall, emptying the cyst by tapping, withdrawing a portion of it and excising it, so that a large opening may remain to allow the fluid secreted by the cyst to escape into the cavity of the peritoneum to be absorbed as fast as it is secreted. This was my intention in the above operation, and would have been carried out, as had been done in other instances, had the cyst, as is usually the case, been very thin and non-vascular. The cyst, however, was unusually thick and vascular, and hence I thought best to remove the whole of it.

CASE 229. *A Multilocular Ovarian Tumour, following Peritonitis and Ascites; Tapped once; Extensive omental adhesions; Incision six inches long; Recovery.*—September 14, 1870, Dr. Atlee visited the neighbourhood of Staunton, Virginia, to see Mrs. W., in consultation with Dr. J. Arthur Wilson, of Churchville, Virginia. About three years before she had her only child, and was delivered by instruments. A month afterwards she was seized with a severe attack of peritonitis, which terminated in abdominal dropsy. This disappeared under the use of diuretics. The dropsical collection several times returned, and was as often removed by treatment. But latterly diuretics have altogether failed to relieve her.

She nursed her child, and menstruation returned in a reasonable time after the parturition, but in August, 1869, she missed her menstrual period, and after that date there was no appearance of a return. Soon after this, whenever the dropsical swelling was reduced by diuretics, Dr. Wilson noticed a tumour, as large as an egg, in the left iliac region, which continued to increase. The medications failing to relieve her, and the distress and oppression becoming so great from the distension, Dr. Wilson tapped her, and removed four weeks before several pints of clear pale liquid, containing shreddy particles. This caused the right side to subside, leaving a pretty solid tumour to occupy the left side. The constitution is good, and the hereditary tendencies are not at fault, but she is very much emaciated and anæmic.

When Dr. Atlee saw the patient, the abdomen was larger than a woman at full period of gestation, and as large as before the tapping. It was pretty uniform in shape. The skin, over the whole extent of the abdomen, was roughened and nodulated, in consequence of the numberless applications of the hypodermic syringe. Morphia was daily introduced, either by the husband or by herself. In consequence of this condition of the skin, the feeling of the parts was greatly masked. Fluctuation was perceptible, but rather indistinct. On manipulating the abdomen, its interior was found to be filled up with hard and soft tumours. In the hypogastric region there was a greater protuberance than elsewhere, formed by a superficial collection of fluid, which seemed to be pent up in a circumscribed space. The lower part of the pelvis was empty. The uterus could not be detected, but the os uteri was discovered opening into the roof of the pelvis, resembling the os when the cervix is fully expanded over the head of a child. The sound entered three and a half inches, and came away bloody. Dr. Wilson said that some time ago a collection of water accumulated below the umbilicus, resembling a deep-seated blister, which broke and discharged a pint of fluid. There was no swelling of the extremities. She suffered great distress, and required the constant use of morphia.

In consequence of the suspension of menstruation, and the peculiar condition of the os and cervix uteri, it was supposed that she was pregnant, until the period for maturing the child had passed by.

The tumour could not be pushed about within the cavity of the abdomen, neither had deep inspirations any effect upon it, nor did the contraction of the recti muscles produce the usual oval protuberance between them.

Diagnosis.—Multilocular ovarian tumour, with adhesions.

At daylight, September 15, 1870, Dr. Atlee commenced the operation, assisted by Drs. J. Arthur Wilson, Joseph Wilson, of Churchville, J. H. Fultz, A. M. Fauntleroy, and J. M. Hanger, of Staunton, Virgi-

nia, and Mr. Wilson, medical student, of Churchville. The operation was commenced with an incision three inches in length, which was afterwards extended to six inches. On penetrating the cavity, a highly vascular membrane was exposed, which proved to be the omentum spread out over the whole anterior surface of the tumour. Between this membrane and the tumour there was a circumscribed purse of water, which no doubt was the deep-seated blister before referred to. This was tapped, and about one pint of fluid drawn away. On slitting open this omental sac, the surface of the tumour was exposed. The long trocar was now passed into it, and several quarts of a clear fluid, containing heavy flocculi towards the last, were drawn away. The hand was now passed into the abdomen, tearing off several adhesions, and also into the main cyst, breaking up many of the smaller cysts, so that their contents could escape into the larger one, in order to reduce the size of the multilocular mass. Their walls were very fragile, and several broke, so as to allow their contents to escape into the peritoneal cavity. After reducing its size, the tumour was extracted with the omentum attached to its anterior and lateral surfaces. The omentum was singularly implicated with the tumour, and constituted the main difficulty with the operation. It spread over the whole tumour clear down to the pubes, and was inserted into the pubes, forming an inseparable attachment like the tendinous part of a muscle, binding down the tumour firmly in its grasp. In two places, also, the adhesions to the tumour were so firm that it was necessary to cut away portions of the cyst in order to detach the omentum. After freeing the omentum, the pedicle, which came from the left side of the uterus, was clamped, and the tumour detached. The bleeding ends of the vascular and hypertrophied omentum were arranged in three fasciculi, tied, retrenched, and subsequently secured in the track of the wound. The abdominal and pelvic cavities were well cleaned out, and the wound closed.

The tumour consisted of the left ovary, and was polycystic.

Dr. Atlee received but one letter, which was dated on the 20th of September, respecting the condition of the patient. She was doing as well as could be expected at that time. Subsequently he heard through a neighbour that she had entirely recovered.

ART. XVI.—*Ovariectomy*. By JOHN L. ATLEE, M.D., of Lancaster, Pa.
Reported by T. E. MITCHELL, M.D., of Frederick, Md.

Multilocular Ovarian Tumour; Slight Adhesion; Incision Six Inches in Length; Recovery.—Mrs. L. B. W., of Lexington, Mo., aged 45 years; married at the age of 15; has borne six children, three by her first and three by a second marriage, the youngest of whom is eight years old. Has always menstruated regularly. During the early part of 1870 she first noticed a slight enlargement of the abdomen, which steadily increased, until at the end of twelve months she was larger than at full term; she still menstruated regularly and her general health was but little impaired, but the weight of the tumour and the great distension caused by the accumulation of fluid gave rise to such intense suffering, that she was,

at her own request, tapped on the 26th day of May, 1871, by her attending physician, who drew off at that time two gallons of a dark, thick, mucilaginous fluid. The operation gave her great relief, which was, however, only temporary. The fluid again rapidly accumulated. At the solicitation of her friends, she determined to have the tumour removed, and for that purpose she journeyed to Lancaster and placed herself under the care of Dr. J. L. Atlee. After a careful examination of her case, Dr. A. pronounced it a multilocular ovarian tumour and favourable for operation. Being desirous to have the operation performed with as little delay as possible, she was immediately put upon the usual preparatory treatment. Bowels thoroughly evacuated, and an occasional dose of 20 drops elix. opii administered to keep them quiet, with no food whatever for twenty-four hours prior to the operation, the patient being allowed to take ice only.

July 11, 11.30 A.M. In the presence of Drs. Walter F. and J. L. Atlee, jr., Parry, of Lancaster, and T. E. Mitchell, of Frederick, Md., the patient, under the influence of an anæsthetic, Dr. Atlee made an incision six inches in length in the linea alba down to the tumour. The main cyst was punctured by a large trocar, drawing off three and a half gallons of mucilaginous fluid. After reducing the size of the tumour, and the adhesion (which was by a small band of peritoneum to the anterior wall of the abdomen) divided, the extraction of the tumour, was readily accomplished, and the pedicle, which was about six inches long, secured by the clamp and divided. The incision closed by six harelip sutures.

The tumour consisted of the right ovary (one large cyst and a number of smaller ones), weighing thirty-five pounds.

For the first two hours the patient suffered from intense nausea, and vomited twice—undoubtedly the effect of the anæsthetic. Pulse 125. 3 P.M., administered 25 drops elix. opii; complained of pain in the region of the bladder, which was relieved by the introduction of the catheter and drawing off 3xvj urine; after this she rested more comfortably until 5 P.M., when her suffering was again increased by distension of the bladder. The catheter was again used, and 3xij of urine drawn off, followed as before with relief. 10 P.M. Pulse 120; the bladder again relieved of 3vij of urine, after which she slept at intervals until 2.30 A.M., July 12, when she awoke complaining of distension of the bladder, which was immediately relieved by drawing off 3xxiv of urine, the pulse running down in a half hour to 101. Skin moist; perspiration about the face; slept comfortably until morning. 6 A.M. Pulse 98. After relieving the bladder of 3vij of urine, she rested comfortably throughout the day, except when the bladder became distended, one pint of urine having been drawn off at 10 A.M. and 4 P.M. 10 P.M. Administered 20 drops elix. opii, which produced quietness but no sleep. Allowed toast-water after having fasted for 55 hours.

13th. Pulse 91. Considerable menstrual discharge. Was much refreshed by a cup of coffee. Had arrowroot gruel during the day. 10 P.M. Restless and nervous during the afternoon; allowed to pass urine without the use of the catheter; free menstrual discharge; administered chloral grs. x, which was repeated in four hours, after which she slept comfortably until morning.

14th. Pulse 83. Very comfortable; allowed coffee for her breakfast, with arrowroot gruel during the day. 3 P.M. Complained of the clamp being very painful. Was relieved by 20 drops elix. opii. 8 P.M. Re-

moved the clamp, cleansed the wound, and applied sol. carbolic acid. Pulse 90; administered 20 drops of elix. opii, tr. valerian ʒj, which was followed by a comfortable sleep.

15th. Pulse 82. Appetite good, and in every respect comfortable.

16th. Pulse 90. Passed a comfortable morning, but becoming nervous and restless, at 2 P.M. 20 drops elix. opii were given her, with relief. Administered an enema, subsequently a dose of castor oil (ʒij), for the purpose of moving the bowels, without any effect.

17th. Passed a comfortable night without any anodyne; enema repeated, followed by a full action from the bowels; menstrual discharge still continues.

18th. This morning (one week from the day of the operation) the pins were removed, the wound having healed by the first intention.

19th. Pulse 94. Slight fever (which soon abated) with loss of appetite.

20th. Pulse 93. Stronger and better than at any time since the operation. Sat up for a few minutes while her bed was being made.

23d. Has been quite comfortable for the past two days. Walked down stairs to her dinner without feeling any inconvenience whatever beyond a little fatigue.

24th. Rode out for an hour, enjoying the ride very much.

28th. Left Lancaster yesterday morning, remaining over night in Baltimore, and reached Frederick, Md., this morning, feeling well and but little fatigued from her journey. From this time her convalescence continued, her strength increasing from day to day, with but one interruption, a slight attack of cholera morbus, the result of a little imprudence in diet. From this she soon rallied.

August 31. Has entirely recovered her health, feeling better than for many years, and leaves for her home in Missouri this evening.

September 25. Mrs. W., reached home on the 3d inst., having borne her journey without feeling any inconvenience whatever, and is now attending to her domestic duties with all her former energy.

ART. XVII.—*Trephining and Removal of a Bullet which had passed through the Brain.* By WILLIAM A. BYRD, M.D., of Ursa, Illinois.

In the October (1871) number of this Journal, Dr. Benjamin Howard relates a case of trephining for a bullet that had traversed the greatest convexity of the forehead and then entered the skull, the patient making a good recovery. In commenting upon his case, Dr. H. says he has not been able to find one exactly similar. The case herein reported, though somewhat analogous to Dr. Howard's, is more like the one reported by Baron Larrey. I regret that I can only report it from memory and in an imperfect form.

After the battle of Champion's Hill, Mississippi, May 16, 1863, during which I was wounded myself, William C. Hopkins, of St. Louis, Missouri,

belonging to the same regiment with myself, 1st and 4th Missouri Confederate Volunteers, was brought into the yard that served for a hospital, and was laid upon the pile of cotton which served for bunks next the one I occupied, suffering apparently from a contused wound 'of the forehead immediately above the right eye. When the surgeon having charge of the ward came around to examine the wounded, he pronounced the wound of Hopkins a contusion produced by a fragment of shell. During the six days I remained in the hospital at that place his wound was dressed with cold water-dressing, the man being delirious most of the time, sitting and talking to almost every one around him in a mixed jargon of French and English, though at times he was perfectly rational. He slept well under the influence of morphia, which I gave him myself when he got too noisy.

After I left that hospital to go to Virginia, I was informed by Mr. Hopkins, and others of my acquaintance who were with him, that he was moved to a hospital at Clinton, Mississippi, that was in charge of a Dr. Hunt, of Louisiana, who, ten days after he received his injury, was examining his head, when he discovered a spot a little to the right of the occipital protuberance that was painful when touched, and having the appearance of being a very slight portion of the occipital bone forced by some power from within outward. This led him to examine more carefully the wound of the forehead, which by this time was suppurating freely. He found that the frontal bone had received a fracture of both tables, but in such a manner as to allow the piece or pieces to spring back almost into a natural position. Passing a probe in at this wound, he found that it passed to the back part of the head in immediate neighbourhood of the lesion of the occipital bone, where it met a hard convex substance.

This settled the diagnosis, so far as Dr. Hunt was concerned, and with the assistance of the hospital staff he trephined over the supposed site of the foreign substance, and was rewarded by finding a large conical leaden bullet, much roughened by its passage through the frontal bone.

How the case progressed after this I know not; but upon my return to my regiment, or shortly afterwards, which was in September, 1863, I saw Mr. Hopkins, and examined the scar both upon the front and back of his head, and also heard several of my friends speak of being present during the operation.

I saw Mr. Hopkins several times during 1864; in fact, during the early part of the year—until May, I think—he was with the regiment, doing duty as a soldier most of the time. He made no complaint of his head bothering him except when marching under a hot sun, which he said caused him to become dizzy, with a heavy headache.

Some time during 1864 he was detailed on some in-door service, since which time I have not seen him, but believe that he might be found by addressing him at St. Louis, Cape Girardeau, or New Madrid, Missouri, at which places I think he has relatives.

I was not acquainted with Dr. Hunt, and do not know where he might now be found, or I should have addressed him, and requested that he, being the operator in the case, report it. But that now being impossible, I give the case to the profession as I know it.

URSA, ILLINOIS, Nov. 27, 1871.

ART. XVIII.—*Sequel of a Case of Removal of a Fibro-plastic Tumour from the Vocal Cord.* By HENRY K. OLIVER, M.D., of Boston, Mass.

IN Vol. LIV. of this Journal (July, 1867), a report was published by the writer, of the successful removal of a fibro-plastic tumour from the vocal cord by the aid of the laryngoscope. Inasmuch as this variety of tumour is comparatively rare in the larynx, and has a marked tendency to recur, it is thought worth while, now that a considerable period of time has elapsed, to record the final result of the case. The writer is the more inclined to do this, because an erroneous impression might be got from mention of the case in a work lately published by a distinguished laryngologist. Moreover, on account of the few examples of the kind in the larynx which have been submitted to treatment, such a record might, in the future, go far towards diminishing the estimated chances of complete extirpation by an intra-laryngeal operation.

In the "Essay on Laryngeal Growths," by Dr. Morell Mackenzie, of London, lately issued, the case referred to is mentioned in the "tabular statement of published cases treated by other practitioners." The result there given is "Improvement;" and under the heading "Remarks" is recorded, "A recurrence took place." Recurrence did take place, certainly, but this happened after incomplete removal; none has occurred since complete extirpation was effected. Moreover, a most satisfactory result as regards the voice can be announced.

The writer last examined Mr. H., his former patient, in July, 1870. The vocal cord was quite free from any appearance of the growth, and even the cicatrix, which was visible for some time after the closure of the wound, could be with difficulty detected. The cord seemed to be, however, a little thicker than its fellow. The voice was perfectly good, as good, Mr. H. thought, as it had ever been, and he had, for some time, resumed his position as a member of the choir of his church.

In August of the present year, the writer was informed by Dr. Cogswell, of North Easton, Mr. H.'s family physician, that his vocal function was perfectly good in all respects.

Boston, November, 1871.

REVIEWS.

ART. XIX.—*A Treatise on Diseases of the Nervous System.* By WILLIAM A. HAMMOND, M.D., Professor of Diseases of the Mind and Nervous System and of Clinical Medicine in Bellevue Hospital Medical College; Physician-in-Chief to the New York State Hospital for Diseases of the Nervous System, etc. With forty-five illustrations. 8vo. pp. 754. New York: D. Appleton & Co., 1871.

PERHAPS the most decided general impression one gets from reading Dr. Hammond's book is that of his extreme positiveness. The reader wishes he "could be as sure of anything as Dr. Hammond is of everything," for it is very comforting in these days to know that any medical, and especially therapeutic, matter has been "placed beyond the possibility of a doubt." But it is more than doubtful whether this is warranted by the present state of science, great as have been its advances in the last few years in the field of nervous physiology and pathology; and although the author tells us that his opinions are largely founded on his own experience, he does not inform us how he arrived at those opinions, with details sufficiently convincing to entirely remove in his readers the hesitation he never seems to feel himself, and we think the impression is likely to be that his positiveness arises from his own mental constitution rather than from the character of his facts, so that after all we must depend for our proofs on what was previously known, unless we wish to take, instead of proof, the author's *ipse dixit*.

Pathology forms no exception to this rule, but pathology, and especially pathological anatomy, are very far from being the strong points of this book, the latter class of data being singularly meagre in comparison with the large numbers of rare cases mentioned.

The work is divided into five sections, and an introductory upon instruments for diagnosis and treatment. The first section treats of diseases of the brain.

In the first two chapters the opposite conditions of cerebral congestion and cerebral anæmia are described. Although it is admitted that their diagnosis may not always be certain, yet the line between them is sharply drawn, the diagnosis principally resting on the condition of such portions of the circulation as are accessible to observation, including the fundus oculi as seen by the ophthalmoscope, as well as on the condition of the pupils, the existence of drowsiness or wakefulness, and the character of the accompanying headache. We find, however, although the fact that these two opposite conditions resemble each other in many symptoms is stated, no mention of the reason, which is, as Niemeyer justly states, that the conditions of passive hyperæmia and anæmia are both alike in a most essential point, preventing the access of freshly oxygenated and nourishing blood to the nerve cells.

The two chapters on cerebral and meningeal hemorrhage present no features calling for special remarks.

Chapter V. is upon partial cerebral anæmia from obliteration of cerebral arteries; and

Chapter VI. is upon the softening consequent upon these accidents, or occurring independently. It is of interest to note that Dr. Hammond's explanation of the cause of congestion of the retina in a case of embolism differs materially from that given by the reporter of the case quoted by him from the *British Medical Journal*. Dr. Hammond says that stopping up the middle cerebral artery forces more blood into the other branches of the internal carotid, of which the ophthalmic is one, thus the increase of blood in the eye denoting its diminution in the brain. The reporter of the case referred to supposes the intense congestion of the retina to denote a similar condition of the brain, and the latter explanation corresponds much more exactly with our author's usual theory. If, however, retinal congestion means both anæmia and hyperæmia, the value of the ophthalmoscope in diagnosis cannot be quite so great as it is represented.

The chapter on aphasia is useful as defining how this term should and should not be applied. The pathology is briefly and clearly summed up as follows:—

“The gray matter of the lobes presides over the *idea* of language, and hence over the memory of words. When it only is involved, there is no hemiplegia, and there is no difficulty of articulation. The trouble is altogether as regards the memory of words.

“The corpus striatum contains the fibres which come from the anterior column of the spinal cord, and is besides connected with the hemisphere. A lesion, therefore, of this ganglion, or other part of the motor tract, causes paralysis of motion on the opposite side of the body. The cases I have detailed show, without exception, that the power of co-ordinating the muscles of speech is directly associated with this hemiplegia. A lesion, therefore, followed by hemiplegia and ataxic aphasia, indicates the motor tract as the seat. If amnesic aphasia is also present, the hemisphere is likewise involved.”

The next six chapters are upon inflammation of the brain and meninges, and diffused and multiple cerebral sclerosis, the latter of which the author was the first to recognize as a distinct disease. Since the author differs decidedly from a physician with so large an experience as Dr. Flint, in regard to the frequency of cerebral rheumatism, a report of a case or two, with an autopsy, would carry more weight than a simple expression of opinion.

The next chapter is devoted to tumours of the brain.

Sixty pages treat of insanity. It is hardly necessary to remark that the professed alienist is not likely to increase his knowledge or correct his views by such a cursory glance, and the general practitioner, for whose instruction the book seems chiefly designed, would probably find this chapter entirely inadequate and unsatisfactory. It reads more as if written for some compendium or handbook to be used by students in preparing for an examination than as a part of a treatise for the instruction of scientific men.

Even the general practitioner, if familiar only with the criminal trials reported in the daily papers, must be fully aware that the diagnosis of insanity, making the fullest allowance for all the “ometers,” “scopes,” and “graphs” of modern science, is not always easy, and cannot be very thoroughly treated in fourteen lines. He (the general practitioner) might

hesitate also to accept without reservation the proposition so positively stated, that "the insanity of women generally has a reflex origin." While admitting its truth if only a "sometimes" were substituted for the "generally," he might fail to see why the female brain, though differing from the male slightly in average size, and possibly also in texture, should be regarded by some specialists as an organ fitted solely for the reception and "reflection" of morbid sensations from the pelvis, and wonder why the female thinking machine, more delicate, it is true, in its emotional part, but acting in the same way and with the same activity on the same subjects, should not be liable to derangement from the same causes. What makes this curt statement the more surprising is the eminently sensible view taken by the author of the causation of hysteria (p. 629), which, he says, is "probably the result of the delicacy of organization, and greater development of the emotional system, acted upon by the exciting causes to be presently mentioned," the latter arising by no means wholly or chiefly from the sexual region.

It certainly seems, if hysteria can find not only its predisposing but its exciting causes elsewhere than in the sexual organs, that, *à fortiori*, insanity, a disease to which men are even more liable than women, might also do so.

We observe that our author does not admit the existence of temporary insanity, or mania transitoria, as it has been supposed to exist in some recent criminal cases, notably that of Andrews. He says that the

"height of the paroxysm is always preceded by symptoms of mental aberration, and that, though the patient may subside into a condition of comparative sanity, the evidences of disease are still present, and remain in him for days, weeks, and even months and years. The symptoms are generally those of cerebral congestion."

Section II. treats of diseases of the spinal cord. The most important and interesting of the eleven chapters is that upon spinal anæmia, of which the author makes two divisions: 1st, anæmia of posterior columns, or spinal irritation; and 2d, anæmia of antero-lateral columns, often giving rise to reflex paralysis, and especially reflex paraplegia. The former of these affections, which seems likely, under Dr. Hammond's patronage, to come somewhat into fashion again, and, without being, as before, "all the rage," to assume more nearly its proper position in pathology, is diagnosed principally by the existence of cutaneous hyperæsthesia at some point over the spinous processes of the vertebræ. A more deep-seated pain, however, may often be detected by suitable manipulation. Dr. Hammond admits the want of anatomical evidence, which, for many and obvious reasons, is extremely difficult to procure, in favour of his view of the pathology, but considers it sufficiently established by clinical and therapeutic data.

In regard to reflex paralysis, the author accepts in a measure both Brown-Séquard's theory of vaso-motor spasm, and Dr. Mitchell's of exhaustion of nervous centres.

The chapters on hemorrhage, and inflammation of the cord and its membranes; spinal softening, sclerosis of the antero-lateral and posterior columns of the spinal cord, tumours, and secondary degenerations of the cord; and tetanus, present no features of novelty.

Muscular contractions coming on *late* in paralysis, are attributed, following Bouchard, to secondary changes in the cord, and not to irritation existing at the seat of the original lesion.

Section III. is devoted to the consideration of cerebro-spinal diseases, namely, hydrophobia, epilepsy, catalepsy, ecstasy, chorea, hysteria, multiple cerebro-spinal sclerosis, and athetosis.

The chapter on hysteria we have before adverted to for the soundness of its views. We are, however, inclined to think that most physicians would have a good deal less confidence in drugs for its treatment than Dr. Hammond seems to have, though he speaks with no respect of the classical "antispasmodics." "For putting an hysterical patient into a proper frame of mind, he knows nothing equal to the bromides."

The most noticeable among the remaining chapters is that upon athetosis, which is a heretofore undescribed disease, "mainly characterized by an inability to retain the fingers and toes in any position in which they may be placed, and by their continual motion." "Its analogies are with chorea and cerebro-spinal sclerosis, but it is clearly neither of these diseases." Dr. Hammond has himself seen one case of this disease, and had a minute description, with photographs, of another.

Section IV. includes an interesting group of diseases, characterized by degeneration and atrophy of nerve cells in the nerve centres. The cells affected may be either "trophic" (progressive muscular atrophy), motor (glosso-labio-laryngeal paralysis), or both (organic infantile paralysis, hypertrophy of muscular connective tissue).

We think that such a classification must be regarded as merely provisional, for, until we know more accurately the limits within which muscular nutrition is affected by exercise and the variations of blood supply, we ought not to assume too confidently the existence of a class of nerves or nerve cells for which there is absolutely no anatomical, and very far from conclusive physiological, evidence.

Chapter IV. of this section is upon functional derangements of motor nerve cells (paralysis agitans, writers' spasm, and lead paralysis).

Section V., upon diseases of peripheral nerves, is too short to be at all satisfactory, and is apparently inserted for the sake of systematic completeness.

There are but few original views advanced in the work whose contents we have just indicated, but the recent theories are stated with the greatest confidence as fixed acquisitions of science. One of the most noticeable features is the extent to which "all the modern improvements" are made to do service in diagnosis and therapeutics. The ophthalmoscope has for some time been recognized as of great value in diagnosing certain organic diseases of the brain affecting the circulation in the retina, but we think no one before Dr. Hammond has relied so fully on the observation of hyperæmia or anæmia of the fundus oculi to prove the existence of the same condition in the cerebrum.

In the department of therapeutics, which is evidently the point where Dr. Hammond relies most firmly on his own experience, the peculiar characteristics of the book are most strongly marked. A good example of his hasty and confident style is found in the following short sentence from page 747, the subject being the treatment of neuralgia: "If rheumatism be clearly made out, the blood should at once be rendered alkaline by liquor potassæ." Now, the blood is very seldom, if ever, otherwise than alkaline, even in rheumatism; next, the alkaline treatment is no specific even for rheumatic fever, and much less for the subacute or chronic form, with which the neuralgia is more likely to be associated; and lastly, if the

blood is to be made (more) alkaline, liquor potassæ is not the best thing to do it with.

The bromides, and especially the bromide of lithium, are agents upon which our author places special reliance. His experience would certainly tend to disprove the theory that bromide of potassium is active only as a potassium salt, and not as a bromide. In epilepsy, he would use them so as to produce well-marked bromic cachexia as soon as possible, and not suspend their exhibition until "the phenomena are sufficiently well marked to excite the gravest apprehensions" of the practitioner.

If the bromides are useful in catalepsy, where there is reason to suppose that the brain and cord are in a state of anæmia, would it not indicate that these drugs have some action beyond that of diminishing the blood in the nervous centres?

Other remedies in which he places great confidence are phosphorus, especially in the form of phosphide of zinc, other zinc salts, chloride of barium, nitrate of silver, ergot, and strychnia.

Last, but not least, we mention the galvanic current, and it is greatly to be regretted that the author has not given us more detailed facts beyond the mere statement of benefit received, in regard to this powerful agent, which, notwithstanding the number of books which have lately appeared, needs much more light thrown upon it. In the treatment of cerebral congestion, the author uses the constant current, both by application more or less exactly over the sympathetic, and by direct application over the mastoid processes. He says, "observation with this instrument [ophthalmoscope], while the current is acting, shows that the vessels of the retina contract, and hence there can be no doubt that the result is produced upon those of the brain." With all due respect, we think there *can* be a doubt, since it has been shown experimentally (by Nothnagel) that a portion of the vaso-motor nerves of the brain leave the cerebro-spinal axis somewhere above the roots of the superior cervical ganglion. This makes no difference, to be sure, on a theory which, we think, has a good deal to support it, namely, that the so-called galvanization of the sympathetic is really of no greater efficacy than arises from the cutaneous excitation involved, and that phenomena following it are of reflex origin; but if it is supposed that the whole or a large part of the current passes through the sympathetic nerve and no other, a supposition which an anatomist might find some difficulty in accepting, the nervous distribution just mentioned would furnish a very good reason why we cannot be quite sure of what passes in the brain by what we see in the eye. It would also be interesting to know, if the galvanic current possesses the power of picking out the sympathetic from among the nerves and other structures of the neck, how it is confined to the pneumogastric when one conductor is placed upon the neck and the other rubbed over the epigastrium, where the sympathetic possesses as extensive a distribution as the pneumogastric, to say nothing of the great solar plexus. We can easily believe our author when he states that Boudault's pepsine is more efficacious in the relief of gastric derangements than the proceeding just described.

With regard to the printer's work, it is of course good, but we cannot say as much for the engraver. His work is in about the style of a third or fourth class weekly illustrated paper. The lady (page 364) on whose countenance apprehension and terror are said to be clearly depicted, seems to us to wear an expression of utter vacuity or indifference, while on the opposite page the engraver has atoned for his failure to give the required

expression by representing with great fidelity to the photograph, the apparent elephantine size of the hands.

Nearly all the portraits, including that of the patient with spinal meningitis on page 453, are characterized by an expression of serenity and composure which speaks volumes for the skill of the symptomatic treatment, even if the therapeutics, in the stricter sense of the word, have failed.

We opine also that the two engravings of sections of spinal cord are not the two to which Dr. Lockhart Clarke would like best to see his name attached, and that a diagram which may do very well for the pages of a weekly journal is hardly worthy a place in a formal treatise.

This department is guilty of omissions as well as commissions. Some of the outlines of sections of spinal cord from the *Archives de Physiologie*, which the engraver could not very well have spoiled, would have been quite as useful in the fourth section as the sketch on page 704, which looks like one of Mr. Ruskin's pre-Raphaelite foregrounds.

In conclusion, we have only to say that this book, which is the fruit, but not well-ripened fruit, of a large experience and extensive physiological research, notwithstanding its faults, which affect its scientific rather than its practical merits, cannot help being useful; but we do think that a physician of the high scientific attainments and unequalled opportunities of the author, owes to the profession a better work than the one under notice.

R. T. E.

ART. XX.—*Essay on Growths in the Larynx: with Reports and an Analysis of One Hundred consecutive Cases treated by the Author, and a Tabular Statement of all Published Cases treated by other Practitioners since the invention of the Laryngoscope.* By MORELL MACKENZIE, M.D. London, M.R.C.P., Physician to the Hospital for Diseases of the Throat, and to the Royal Society of Musicians; and Senior Assistant-Physician, and Lecturer on Diseases of the Throat, at the London Hospital. With numerous Illustrations in Chromo-Lithography and Wood-Engraving. 8vo. pp. xii., 263. Philadelphia: Lindsay & Blakiston, 1871.

THE demonstrations of Professor Czermak, during his tour in Europe, after his conviction of the practicability of the laryngoscope in elucidating the physiology and pathology of the larynx, cannot fail to be recalled with the highest gratification by those who were fortunate enough to witness them. This tour, indeed, it may safely be predicted, will always have an historical interest, for it is undoubtedly true that, "notwithstanding the beautiful simplicity effected by Czermak in the details of the laryngoscope, the profession might not have become impressed with the value of the instrument, had not his brilliant demonstrations delighted and astonished Europe."¹

Many of the physicians who were privileged to meet Professor Czermak were already zealous students of the diseases of the throat and larynx, and they eagerly seized upon the laryngoscope as the long-sought means of bringing into the range of external pathology the conditions which

¹ "The Use of the Laryngoscope." Mackenzie.

had, of necessity, been retained within the limits of internal pathology. Of these disciples, the author of the volume before us was one of the most earnest, and his admirable work—*The Use of the Laryngoscope in Diseases of the Throat*, published in 1865—showed to what advantage he had turned his instruction.

In 1863, the Jacksonian Prize of the Royal College of Surgeons, of England, was awarded to Dr. Mackenzie for his Essay on Diseases of the Larynx. It was his intention, as we learn from the preface of the present work, to publish the Prize Essay at the time, but increasing engagements prevented, and "laryngology made such rapid advances, that the views of one year became almost an anachronism in the next." He adds that, under these circumstances, he determined to publish, from time to time, a series of monographs on diseases of the throat, based on his original prize essay, but brought up to the most recent date. The first of these essays was that on Hoarseness, Loss of Voice, and Stridulous Breathing, in relation to Nervo-Muscular Affections of the Larynx, and the great interest which he conceives attaches to Laryngeal Growths, has induced him to choose this subject for his second, the present, Essay.

Our author might well have employed more positive language here, for, certainly, the interest which attaches to these growths surpasses that of any other branch of laryngology. The bringing to light of that which, before the invention of the laryngoscope, was merely suspected to exist, and the practicability of successful remedial measures, envelop the subject with the highest interest; while the importance of continued progress in these latter respects to the individuals whose voice, and whose life perhaps, may be threatened with extinction, can hardly be estimated. Nothing, surely, in the history of surgery, is more brilliant than the advancement already made in the operative branch of laryngology. Indeed, when one reflects upon the immense distance between the suspicion of the existence of a laryngeal growth, aroused in earlier times by subjective symptoms, and the removal, through the fauces, of a sarcomatous tumour growing from the posterior wall of the upper trachea, by Schroetter, of Vienna, he is disposed to claim the first place for laryngoscopic surgery.

"The present Essay is based on an experience of nearly 150 cases of laryngeal growths. It includes detailed Reports of 112 cases, of which 26 have been previously published in the medical journals, or the Transactions of Medical Societies, and 86 are now brought forward for the first time.

"Of my 112 cases, 100 underwent treatment, and 12 were merely observed with the laryngoscope.

"The 100 cases are consecutive, no treated case having been intentionally omitted. 77 of the cases were cured; in 18 improvement took place; in 3 the result was negative; and 2 died. Of the fatal cases, one was an infant, and the other an adult. In both tracheotomy had been performed."

The author has excluded all cases of carcinoma, and all cases of "false excrescence," a term used to designate irregular projections in different parts of the larynx, resulting from syphilitic ulceration and subsequent cicatrization. A considerable number of true growths which have come under his care since 1870 have also been omitted, inasmuch as it seemed convenient to limit the number of cases treated to 100.

With regard to the "false excrescences," their omission is well enough, for, although their removal is sometimes called for, they cannot be classed among the true growths. We cannot help wishing, however, that Dr. Mackenzie had included the carcinomatous growths in the Essay, and not

confined himself to the consideration of those of a benign character. Some mention of the former type must be and is made in treating of the differential diagnosis of neoplasms, and certainly no class of growths is more worthy of study, when the importance of an early diagnosis is considered. There are, probably, few physicians engaged in the practice of laryngology who have not had the opportunity of seeing a growth of doubtful character pass, under their eye, into a malignant type, the evident invasion of the deeper tissues bearing to them, at once, information of the nature of the disease, and the message that it was then too late to attempt the only procedure which promises a chance for life in these cases, namely, an extra-laryngeal operation. Then come the gradual encroachment upon the cavity of the larynx, tracheotomy, and the painfully lingering days which follow. We are not sure that even the large experience of our author could throw very much light upon the early diagnosis of carcinoma of the larynx, but we nevertheless trust that he will give the profession, at some future time, the result of his observations in this affection.

As to the omission of the cases of growths which Dr. Mackenzie has observed since 1870, there is, we conceive, a better reason for doing this than the fact that those retained would thereby be limited to the convenient number of 100. What the character of these growths was, we have, of course, no means of knowing, but if they were papillomatous, as the majority of them are likely to have been, or sarcomatous, the length of time which elapsed between the date given and the publication of the Essay is hardly enough to allow of a probably correct result being given; for both these varieties, without being of a true malignant nature, have a tendency to recur, and in one this disposition is not limited to the original site of the growth. The loss of the 38 cases is, therefore, more than atoned for in the value given thereby to the results of those remaining.

In addition to the author's own cases, a record of all those published in all countries, in journals accessible to him, which have been *treated* since the invention of the laryngoscope, down to the end of 1870, is appended.

Section I. of the Essay treats of the *History of Laryngeal Polypi*.

Of the cases occurring in pre-laryngoscopic times, in only nine was an attempt made to remove the growth during life. Excluding the case of Koderik, as being vague, in four of the cases remaining (those of Brauers, Ehrmann, Gurdon Buck, and Prat) "direct incision was made through the neck; whilst only in the cases of Regnoli, Professor Middeldorpf, the two cases of Dr. Horace Green, and Sir Astley Cooper's case, was the growth more or less completely removed *per vias naturales*." Since the invention of the laryngoscope, upwards of 200 cases have been published in which laryngeal growths have been *treated* with the aid of the laryngoscope. The number of cases *observed* simply, must be, of course, much larger. Comparing the cases observed with the specimens found in pathological museums, our author remarks upon the "enormous antagonism, as to the comparative frequency of laryngeal growths. In the museums of the Royal College of Surgeons and the various London hospitals, there exist altogether only thirty-four specimens of true laryngeal growth." He accounts for this discrepancy by the circumstances that autopsies are so frequently made without the larynx being opened, and that, when it is opened, a small vegetation may be easily overlooked. He adds the suggestions of Lewin, that, even in cases where death ensued after laryngeal symptoms, the organ has escaped examination, the symptoms being attri-

buted to phthisis, asthma, croup, ulceration of the larynx, spasm of the glottis, etc. Lewin fortifies this statement by quoting numerous cases from Andral, Senn, Pelletan, Dupuytren, etc.

We were ourselves once invited by the physician who had attended the case, to make a post-mortem examination of a child who had died, as he supposed, of phthisis. There had been marked laryngeal symptoms. The lungs were found to be perfectly free from any tuberculous deposit, some œdema only being present. The interior of the larynx, however, was studded with polypi of a papillomatous character, while the glottic aperture was completely occluded by warty masses growing from both vocal cords.

Section II. treats of the *Causes of Laryngeal Growths.*

"Chronic congestion of the mucous membrane of the larynx is, far above all other causes, the most important etiological feature in the production of simple morbid growths in the larynx. In some cases the disease appears to originate in an acute or subacute form of inflammation, but it is generally only as the starting-point of chronic hyperæmia that the more acute attack indirectly leads to the production of a new formation. * * *

"The most common cause of hyperæmia is probably catarrh, and catarrh must, therefore, be looked upon as the great predisponent of growths. The various other influences, hereafter considered, probably only act through establishing a condition of hyperæmia."

This opinion regarding the most common cause of laryngeal growths is shared by the majority, certainly, of the leading pathologists and laryngologists of former as well as of present times, and there are probably few physicians, of even a moderate experience in the diseases of the larynx, who have not had cases confirmatory of this view. One not unfrequently sees one or two minute papillary polypi, where the history of the case shows that an affection of the mucous membrane has existed for some years. There would seem, therefore, to be no doubt as to which was the antecedent pathological condition.

It might be interesting to inquire, however, if it is quite certain that all the species of laryngeal neoplasms may be excited by catarrh. Without doubt the papillary form is most commonly induced by this affection. This form is that most frequently met with, and most apt to be found multiple. In regard to the other kinds, which almost invariably occur singly—even the mucous polypi which are generally multiple in the nasal cavity—we think it more probable that they exist antecedently, and that the hyperæmia which is found associated with them, which is generally moderate in degree, and limited to their immediate vicinity, is a consequence, and not the cause, of their appearance. We are inclined, moreover, to believe that, next to the benign papillomata, a carcinomatous condition is the most frequent result of a chronic hyperæmia of the larynx. Authorities admit that this result sometimes follows.¹

The tendency of laryngeal catarrh to excite growths is not sufficiently recognized by physicians generally, and, although it may not be strictly appropriate thus to refer to the subject here, we may be pardoned for urging upon them the importance of advising special treatment whenever an acute catarrh passes the limits of its ordinary natural period of time.

¹ "The persistent irritative conditions that obtain when portions of the larynx are inflamed and swelled, favour the formation of carcinoma, just as is the case in cancer of the œsophagus and stomach." (Chronic Diseases of the Larynx, Tobold, Beard's translation, p. 217.)

Concerning the *Influence of Dyscrasia*, we quote the following :—

“Originating as the morbid affection does in local irritation, it is not surprising to find that diathesis appears to have little influence in its production. Neither syphilis nor phthisis, nor any other constitutional condition, appears to favour the growth of these neoplasms. In the later stages of laryngeal phthisis, imperfect papillary growths do occasionally appear on the posterior wall of the larynx, and on the mucous membrane covering the vocal cords and the inner surface of the arytenoid cartilages, but this is the exception. Indeed, both the diathetic conditions referred to, appear to exercise a decidedly antagonistic influence to the development of new formations. Seeing that growths most commonly originate in hyperæmia, and that both syphilis and phthisis frequently give rise to that condition, it might have been expected that these constitutional states would have often been present in cases of laryngeal growth. The fact, however, is, that the congestion of laryngeal phthisis is soon followed by submucous changes, which interfere with growth at the free surface; and though, in the early forms of syphilis, the occasional presence of condylomata shows a tendency to the formation in excess of an imperfectly organized tissue, these manifestations are forms of eruption, which tend to spontaneous subsidence. When a very protracted syphilitic congestion occurs, growths may arise, but this is a rare exception; and Dr. Harlan has well pointed out,¹ that few laryngeal growths can be attributed to syphilis.”

Our author differs from Lewin in regard to the special influence of the exanthemata, as variola, scarlatina, measles, and erysipelas, in the production of laryngeal polypi, and thinks that they can only act indirectly by giving rise to chronic inflammation of the lining membrane of the larynx. Croup and whooping-cough seem to him to act in the same manner.

The *Influence of the Inspiration of Irritating Vapours and Particles of Matter* is next considered.

“* * * But if particles of matter can, as has been so clearly shown, give rise to disease in the lungs, *à fortiori* will they be likely to produce it in the larynx. In the causation of growths, the influence is probably indirect; hyperæmia of the mucous membrane being the immediate result of the inhalation of irritants.”

In the analysis of the tables, which follows, there are evident errors, probably typographical. It appears, however, that out of 160 cases of adult males in which the occupation is stated, 17 were exposed to the influence of dusty particles. Among these were wool-packers, engine-drivers, masons, carpenters, a twine-spinner, a lapidary, &c. Perhaps the overseer in a coal-mine, and the machinist, might properly have been included in this list.

Influence of Age.

“Dr. Tobold remarks that the affection is most common in middle life, from the thirtieth to the sixtieth year, and that laryngeal polypi are least frequently seen in childhood. Dr. Causit, on the other hand, considers that they most frequently occur in early infancy. The latter author, indeed, believes that the disease is very often congenital.”

Our author, while admitting that congenital neoplasms do probably occur, asserts that “there is not a single case on record where a stillborn child has been found to have a laryngeal growth,” and that no “such a growth has been found to exist within the first month or two of infant life.” He thinks, also, that mothers and nurses, not understanding the difference between articulation and vocalization, have been

¹ Am. Journ. of Med. Sci., N. S., vol. lii. p. 122.

"apt to say, 'the child never had any voice,' even though it may have been in the habit of screaming lustily. There are cases, indeed, where the mother can be made to understand the essential difference between articulation and vocalization, * * * but even in such cases, though congenital aphonia is proved, the positive cause of that aphonia cannot be ascertained, and the condition of the larynx at an early period may have been merely that of hyperæmia."

The same difficulty of decision, we may add, appears in cases of laryngeal growth where dyspnoea from birth has been a symptom. Although this fact would seem to point more certainly to a congenital neoplasm, the breathing may have been due to the swelling attending the hyperæmia, which latter condition subsequently gives rise to the growth.

Our author's experience accords with that of Tobold in regard to the period of life most favourable to the development of neoplasms. Of his 100 cases, 72 occurred between the ages of 20 and 50. Of these, 28 occurred between 40 and 50. An analysis of the table containing the cases of other practitioners, shows nearly the same results.

Dr. Mackenzie admits that the actual number of cases of growths in young children is much greater than his tables would indicate; which he explains by supposing that children are not so often submitted to laryngoscopy, and that if they are, the growth may not be found, on account of the pendent position of the epiglottis in children.

"It is worth noting here, that of the 34 morbid specimens collected in the various metropolitan museums, no less than 15 are from children under the age of 12 years."

We are inclined to the belief that Dr. Causit is right in regard to the greater frequency in children. It certainly agrees with our limited personal observation.

In regard to the *Influence of Sex*, the male sex is more obnoxious to neoplasms than the female. Reference to Dr. Causit's cases shows that this greater proclivity of the male sex holds good also among children.

Occupation seems to Dr. Mackenzie to have a considerable influence in the development of growths, those persons being liable to them "who are constantly obliged to use their voice, no matter what may be the state of the vocal organ."

Section III. treats of *Symptoms*, which, following Causit, our author terms *functional* and *physical*.

In regard to the modification of the voice as a functional sign of laryngeal growth, Dr. Mackenzie places a great deal of reliance upon the sudden but fleeting aphonia which interrupts the natural or only slightly dysphonic voice.

Under the head of *Dyspnoea* as a functional sign, the most interesting point mentioned is the following:—

"It almost invariably happens that inspiration is much more difficult than expiration, and Lewin has remarked that the character of the respiration has a certain diagnostic value, as regards the seat of the growth. When inspiration is noisy and stridulous, and expiration comparatively easy, the growth is probably situated above the vocal cords, and *vice versa*."

This difference between inspiration and expiration, which is mentioned by Tobold also, would seemingly depend much upon the size and form of the growth. If it were polypoid, and therefore movable, and of considerable size, the phenomena mentioned would be expected to occur. But if it were sessile, and not in itself movable, it would seem, on first thought, that it would not be likely to induce any marked disparity in the factors of

respiration, whatever its position was. It is to be remembered, however, that the tissues of the interior of the larynx are soft and flexible, and that therefore a sessile growth, if of some size, might readily yield to the in-going and out-going currents of air, obstructing the glottic aperture in inspiration if above the cords, and in expiration if below them.

"The dyspnoea is often paroxysmal. The explanation of this circumstance, as in many other cases of laryngeal obstruction, is, that the patient is able to breathe well, even through a narrowed windpipe, provided no further diminution suddenly occurs. If, however, the patient takes cold, and the mucous membrane becomes a little swollen, a paroxysm of dyspnoea may supervene."

Physical Signs. The Laryngoscopic Signs take, of course, the first place here.

As regards the seat of the growths, the analyses of the two tables show that the vocal cords are especially liable to attack. No explanation of this fact is attempted by our author, and undoubtedly it would be difficult to assign a perfectly satisfactory reason. Perhaps the special activity of the cords, an explanation given by Tobold and possibly by others, is as satisfactory as any. This author remarks, "if the vocal cords, that have few mucous glands, evince a particular disposition for new formations, it is attributable to the fact that these ligaments, clothed with mucous membrane, especially if they have been already the seat of an acute or chronic inflammation, are more liable than any other part of the larynx to almost ceaseless activity and irritation, partly through spontaneous movement, and partly through the vibration of air."¹

Our author in this place refers to the difficulty of deciding by sight alone upon the character, size, and origin of a growth, and finds great assistance in the use of sounds and crotchets. We think the employment of these simple instruments has not been sufficiently recommended by writers heretofore.

In speaking of the "valvular murmur" sometimes heard, Dr. Mackenzie remarks that undue importance has been attached to it.

We have seen a case, in a child, in which this phenomenon was very marked. The growth was a very movable polypus with its origin just below the angle of the vocal cords. But it may undoubtedly be heard where no growth is present. It is sometimes produced by a flabby pendent epiglottis during a sudden inspiratory effort, and, in fact, one skilled in the gymnastics of the larynx may imitate it by the action of the vocal cords.

Under *course and termination*, our author says:—

"As a curious fact recorded in medical literature, rather than a practical matter bearing on the course of laryngeal growths, it may be remarked that there are a few instances in which the disease has been cured spontaneously. In one of these, briefly referred to by Causit, the polypus was expelled by coughing. In another case, reported by Dr. Dobie, a pedunculated growth, about the size of a small cherry, attached to the epiglottis, separated spontaneously. Türck also relates a case, in which this fortunate termination took place as the result of acute laryngitis."

We believe that the fact of the occasional spontaneous cure of laryngeal growths has a real practical value, and we shall again refer to this subject.

To the above cases of Causit, Dobie, and Türck, we can add another example. Spontaneous expulsion of the polypus took place in the child that afforded the phenomenon of the valvular murmur above mentioned.

¹ Op. cit., p. 218.

We notice in this part of the Essay (page 33) the employment of the term "œdema of the glottis." It is to be hoped that this term will be banished from medical literature. It was introduced by Bayle, according to Tobold, who rightly deplors its use. Our author has probably used it unwittingly. In his work on "The Use of the Laryngoscope," page 114, he uses the proper term "œdema of the larynx," but on page 116 we find "œdema of the glottis" again. The term is, generally, a misnomer in more than one sense. It is, of course, not supposed by any one that the glottis can be œdematous; but it is rare that the tissues forming the boundaries of this aperture become swollen to a very great degree. The swelling usually takes place above the vocal cords, and more especially in the loose areolar tissue of the ary-epiglottic folds.

Section IV. treats of *Diagnosis*.

"*Eversion of the Ventricle* is, perhaps, the only intelligible source of error, and this condition is probably rare. I know of only two specimens; one of these was exhibited by Dr. Moxon at the Pathological Society; the other is in the Museum of the Hospital for Diseases of the Throat. * * * In Dr. Moxon's case there is every reason to believe that the prolapse took place *in articulo mortis*, and it is quite possible that such may have been the case in my own specimen. * * * If eversion took place during life, I know of no other treatment but excision of the sac which would relieve the symptoms."

The term "*outgrowths*," Dr. Mackenzie, following Mr. Paget, gives to neoplasms, whether of cartilaginous or fibrous character, which spring from the deeper tissues.

Section V., on *Pathology*, opens by calling attention to the errors likely to be made in determining the histological character of growths. Mention is especially made of the fact that small portions of a growth may fail to demonstrate its true character.

The various laryngeal neoplasms are classified as follows: *Fibro-cellular growths*, which are the type of the connective tissue tumours; *fibromata*, in which the fibrous tissue predominates; *myxomata*, in which the mucous or embryonic matter is most abundant; *fasciculated sarcomata*, in which "the embryonic tissue has already undergone a trace of organization and evolution in the direction of connective tissue;" and *lipomata*, in which fatty matter is very abundant.

"The epithelium, being more exposed, is even more subject to perverted development than the connective tissue; we have, therefore, *simple epithelial growths*; or when, as is commonly the case, they assume a papillary structure, *papillomata* are formed. From the abnormal evolution of the glandular elements, we have *cystic growths* and *adenomata*, whilst the morbid production of bloodvessels gives rise to *vascular growths*, or *angiomata*.

"*Papillomata* are by far the most frequent of all the benign growths in the larynx.

"These growths occur at an earlier period of life than the other kinds of tumours, nearly all cases found in the first decennial period being either papillomatous or benign epithelial. * * *

"Papillomata show a certain disposition to recurrence, the disease having reappeared in four instances out of the sixty-seven cases treated by me. In two others, where the neoplasm was not entirely eradicated, there was rather rapid and considerable increase of the remnant. I have seen many of my patients at long intervals after they have been cured, but, of course, there remain some who were lost sight of at a comparatively early period. The proportion of the recurrence is, therefore, in all probability, rather greater than my statistics indicate."

This impression of our author is undoubtedly correct. Authorities

seem to differ considerably in their individual experience regarding the recurrence of this species of neoplasm, although they nearly all agree in the fact that recurrence is possible. Tobold, however, says, "benign tumours do not appear to recur."¹ Thorough extirpation of a papillary tumour may, indeed, in most cases, as in Dr. Tobold's experience, not be followed by reappearance, but this laryngologist has been very fortunate if he has not seen similar growths make their appearance at other points.

"Though mucous polypi of the nose have a great disposition to recurrence, or to develop in a multiple form, the same fortunately cannot be said of these growths in the larynx. When removed, they have no disposition to recur. In each case, also, there has been only one growth. * * *

"Although, from our knowledge of other retention cysts, we might have anticipated that cystic tumours of the larynx would be likely to fill again, experience, as far as it goes, seems to show that when these laryngeal cysts have been thoroughly laid open, their contents emptied, and the cyst-wall cauterized, there is no tendency to recurrence."

One would naturally ask why tumours, of a kind which tend to recur in other parts of the respiratory tract, do not seem to have this tendency in the larynx. It is a question which the pathologist may find it difficult to solve. Meanwhile the laryngologist can only trust that the future may confirm the past experience in this regard. As yet, however, the rarity of the two forms last mentioned will hardly justify the promulgation of any rule.

Of the mucous polypi, five cases are reported in the two tables; of the cystic, six cases.

"Compound growths are not unfrequent; indeed, it is often exceedingly difficult to determine to which class of neoplasms a given growth belongs."

Of "*other kinds of growth*" which are said to be found in the larynx, such as hydatids by Ryland, and enchondromata, no case appears in either table.

The following quotation is made by our author from Virchow:—

"The cartilaginous outgrowths are sometimes broad and flat, sometimes circumscribed and nodular. On examining the larynx (with the laryngoscope), an outgrowth of this sort, as it has an epithelial covering, is easily mistaken for a polypus, and at the present time, when laryngeal growths are studied with so much interest, these cases deserve special notice, as, from their thickness and hardness, any operation, carried out *per vias naturales*, is altogether impossible."

Under the heading *Comparative Pathology*, our author refers to cases of polyp in the larynx of the cow, of the horse, and of the dog.

Section VI. treats of *Prognosis*, first—

"*In relation to Life*.—Growths in the larynx which cannot be removed with the aid of the laryngoscope are always attended with danger to life, which is either immediate or remote, according as the neoplasm is large or small. The gravity of the prognosis is also affected by the age of the patient, the disease being, *cæteris paribus*, less dangerous in the case of adults than young children.

"In adults death is not likely to take place from suffocation, unless the patient refuses to submit to proper treatment. Of course, if tracheotomy is performed, this peril is at once avoided; but it must not be forgotten that, even in opening the windpipe, there is a very slight, though still an appreciable risk."

¹ Op. cit., p. 225.

The risks mentioned are those of bronchitis, and of disease of the cartilages of the larynx (trachea?) when a canula is worn permanently.

"Even, however, after tracheotomy has been performed, and both the immediate and remote dangers of the operation have been passed through, the presence of a growth in the larynx is not without danger. Suffocation has been ward off, but if the neoplasm continue to grow, dysphagia may come on. Hence, in order to extirpate the growth, it may become necessary to divide the thyroid cartilage, an operation always attended with great danger. * * *

"In children, as the larynx is, of course, much smaller, the disposition to spasm is much greater, and not only treatment, but even accurate diagnosis, is much more difficult; the prognosis, therefore, as regards a fatal termination, is more serious. * * *

"The presence of a growth in children is not unlikely to cause serious congestion of the larynx, and should croup arise, a fatal termination is almost certain. * * *

"In children also the prospect in relation to tracheotomy, both as regards the operation itself and its immediate results, is unfavourable.

"*In relation to Voice.*—As regards the voice, a favourable opinion may, as a rule, be given if laryngoscopic treatment can be employed. * * *

"When laryngoscopic treatment cannot be carried out, and the thyroid cartilage has to be divided, the prognosis, as to recovery of the voice, is unfavourable. * * *

"In giving an opinion as to the ultimate result of these cases, even when treatment is adopted with success, the disposition to recurrence must not be forgotten."

Section VII., *Treatment*. This important branch of the subject occupies, naturally, a large part of the Essay, 40 of the 106 pages of the reading matter being devoted to it. The subject opens with the following judicious remarks:—

"Before considering the subject of treatment, it may be well to observe that there are a few cases in which operative procedure is not required. Thus, small growths on the epiglottis or ventricular bands, which cause little or no inconvenience, may well be left alone. * * *

"In addition to small growths in unimportant parts, it sometimes happens that the neoplasm is not sufficiently defined to admit of its removal. In other cases, where, in consequence of the advanced age or occupation of the patient, the voice is of little importance, no treatment need be urged, unless the respiration be also affected."

Under *Removal of Growths by Laryngoscopic Treatment*, the various kinds of instruments employed are mentioned.

"Most practitioners have their laryngeal instruments curved like a catheter; but I have long employed those of a more angular form. * * * Whilst the former touches, and even presses against the epiglottis, the latter avoids it."

This variety in the shape of laryngeal instruments would seem to show that the particular curve is matter of little moment. We have succeeded better with the abrupt angle. The contact of any instrument with the epiglottis has, with us, always provoked spasm, and there is certainly less danger of producing contact with the abrupt angle. The principal objection is a greater difficulty of introduction.

Dr. Mackenzie's favourite instrument is the forceps. The preference of other practitioners is shown by the following list:—

"Forceps were used alone	13 times.
" in combination with other instruments, or with caustics, or with both	19 "
Knife was used alone	10 "
" with other instruments, or caustics, or with both	22 "
Scissors alone	2 "
" with other instruments, or caustics, or both	11 "
Eraseur or wire loop alone	34 "
" with other instruments, or caustics, or both	14 "
Guillotine, or annular or fenestrated knife alone	8 "
" with other instruments, or caustics, or both	3 "

Concerning the employment of the various procedures recommended for producing anæsthesia of the pharynx and larynx to facilitate operations, our author remarks that he has never found any of them of the least use, and thinks that some are even dangerous in their effects.

"Some of the German laryngoscopists recommend repeated pencillings with chloroform and strong solutions of morphia. Their method has been thus described to me:—

"At seven o'clock in the evening, the larynx of the patient should be painted twelve times with morphia; at eight o'clock, twelve times with chloroform; at nine o'clock, twelve times with morphia; and at ten o'clock, twelve times again with morphia. During the night the patient must be carefully watched to see that *narcotism is not excessive*; and, if necessary, the patient must be stimulated (by strong coffee, "flipping" with towels, &c.). At seven o'clock in the morning, twelve more applications of morphia; at eight o'clock, a laryngoscopic examination is made to ascertain if anæsthesia has been produced; if sensibility still exist, twelve more applications of morphia must be made; and so on every hour until the desired condition be established."

This certainly looks like heroic treatment. One would expect that the "strong coffee" would be needed occasionally. Indeed, some months ago, we learned from a friend who had lately arrived from Vienna, that the coffee and the "flipping" combined failed to relieve the "excessive narcotism." In other words, the patient died. The strength of the morphia solution employed in Vienna is, we believe, ten grains to the drachm of water.

While deprecating these extreme measures, Dr. Mackenzie agrees that,

"By inhaling a few whiffs of chloroform, before treatment is commenced, the larynx is sometimes rendered less sensitive.

"By sucking ice, also, for a few minutes before the operation, laryngoscopic treatment is more easily borne."

Instruments for raising the epiglottis, though useful, possibly, for purposes of diagnosis, he has not found applicable where operations have been necessary.

Although Dr. Mackenzie prefers, as a general thing, the forceps to other instruments, he would not employ force in evulsion, when the growth is of dense structure and very firmly attached. Crushing, he is convinced, is better than evulsion in such cases; but the best purpose is served here by cutting instruments.

The use of scissors or shears our author has relinquished as impracticable.

Something condemnatory even of the use of shears might be properly said. Some forms, at least, merit such treatment. One which we have in our surgical drawer, seems to be eminently adapted to the division of the vocal cords; if, indeed, it could ever be introduced into the larynx, which we are inclined to doubt.

"*Ecraseurs*.—It may, perhaps, be thought that the *écraseur* does not act as a cutting instrument; but, in point of fact, the wire employed is so fine that it actually does *cut* through the tissue. * * *

"The various so-called *écraseurs* were, up to a certain time, all open to the serious objection that the wire was unprotected, and, being necessarily very flexible, it was very often pushed or bent on one side before the loop could be put round the growth. This difficulty was subsequently overcome by Dr. Stoerk, of Vienna, who first suggested that the wire should be concealed in a loop of rigid metal."

Those who are conversant with Dr. Mackenzie's work, *The Use of the Laryngoscope*, will recollect his decided language concerning laryngeal *écraseurs*. In the present Essay he frankly says:—

"In the use of the small, ordinary cutting *écraseurs*, I formerly feared that portions of the growth, separated in the operation, might fall down the wind-pipe, and give rise to serious irritation of the lungs; but experience has convinced me that this danger is chimerical, and that these instruments, if perhaps less useful than others, are nevertheless perfectly harmless."

The *écraseur* is clearly much improved by the addition of the loop, as suggested by Dr. Stoerk. As to its mode of action, it seems to us that it acts in the larynx quite as much by evulsion as by cutting; that, in fact, the two actions are combined, the cutting being antecedent. If this is so, the growth, after being detached, would, generally, be safely dragged out of the larynx. But, in any event, the reflex contraction of the organ, at the time force is applied, would undoubtedly prevent its falling into the trachea.

Dr. Mackenzie's experience with the guillotine leads him to think as little of its practicability as of that of scissors and shears.

Chemical Treatment.—Nitrate of silver and chromic acid are both classed as unsatisfactory agents in the destroyal of growths. The solid form of the latter, however, Dr. Mackenzie applies "with advantage to the remains of a growth which has previously been nearly removed by evulsion." He also applies it to the interior of a cyst, after evacuating its contents by incision.

Our experience with nitrate of silver has been similar to that of Dr. Mackenzie, while the spasm induced by the solid form has been greater than that following the use of the strongest escharotics. We have had better results, however, with chromic acid.

Among *Escharotics*, the one which our author has found most useful is a preparation termed "London Paste."

"This preparation consists of equal parts of caustic soda and unslaked lime. It should be kept as a powder, and only made into a paste with water when required for use. It differs from Vienna paste in so far as soda is employed instead of potash, and water is used for mixing in place of alcohol: it is a far more manageable and less painful compound. It should be applied on the point of an aluminium rod, as I have recommended for nitrate of silver."

Our author cannot mean what he seems to say here, regarding the method of applying the "paste," for the nitrate of silver is to be fused upon the end of the rod. He, of course, employs the compound by taking up a small quantity on the extremity of the rod.

Of the value of the *galvanic cautery* in the destruction of laryngeal growth our author has a decidedly unfavourable opinion, and he has, apparently, given the method a fair trial.

Extra-Laryngeal Methods of Removing Growths. The indications for these methods are first detailed.

"* * When a growth, however, is situated in the ventricle, and only slightly projects from the ventricular orifice, it is sometimes impossible to remove it entirely from above. The projecting portion may be cut off, but the base remains. The question arises in these cases, whether the growth should be removed from time to time, as it sprouts out of the ventricle, or whether an external operation should be performed. Should a large tumour gradually extend the ventricle and push the ventricular band before it, direct incision into the larynx, and subsequent incision into the ventricle, might possibly be called for; but, as a matter of fact, as soon as the ventricle becomes at all tense, the growth emerges from the ventricular orifice. Indeed, even before the ventricle becomes at all full, the disposition to growth naturally takes place at that point where the resistance is least, and neoplasms, originating in the ventricle, emerge at an early period from its cavity.

"*Contra-indications for Extra-laryngeal Methods.* It may be stated as a cardinal law, that an *extra-laryngeal method ought never to be adopted* (even where laryngoscopic treatment cannot be pursued) *unless there be danger to life from suffocation or dysphagia.* Direct incision into any part of the air-passages is always attended with both immediate and remote danger to life, the amount of risk being dependent on the situation of the opening, and on the mode in which the treatment is carried out. The various degrees of danger will be considered when discussing the merits of the different extra-laryngeal methods, and it is sufficient here to remark, that the existence of dysphonia does not justify operations which, though easy to perform, may be regarded as 'capital.' Hence an extra-laryngeal operation is not justifiable for the removal of a *small* growth in the larynx, unless that growth give rise to dangerous dyspnoea, and cannot be removed by a less serious method. No doubt a direct incision into the larynx offers a readier and more brilliant method of extirpation than the more tedious process of laryngoscopy, but to do an external operation where laryngoscopic treatment could be ultimately successful, is not less reprehensible than to perform lithotomy in a case of calculus, in which lithotritry could be effected, or to amputate a limb where resection could be accomplished. A dangerous operation, even though successful, is not justifiable when a perfectly safe method might have been adopted. At least one case, if not more, has been reported in which the growths might easily have been removed through the fauces, and in which neither the size of the growth nor its situation justified the external operation.¹

"If these improper cases were withdrawn from the various statistics in which they appear, the results of external incision would appear much more unfavourable. Contra-indications based on danger to life having been thus briefly pointed out, it only remains for me to remark that destruction of the vocal function is often the result of the most available extra-laryngeal method."

In treating of *the method of procedure* in thyrotomy, our author says:—

"The first question which arises is whether tracheotomy should or should not be performed as a preliminary measure of safety. In some cases this precaution has been taken, whilst in others it has not been adopted. Tracheotomy should, in my opinion, always be performed in the first instance. Three advantages are thereby gained, and no additional danger is incurred: 1. The danger of suffocation, from blood passing into the trachea, is avoided; 2. The operation can be performed with greater deliberation, and the growth can be removed with more certainty; 3. If laryngitis should subsequently supervene, the patient is in a condition of safety. * * *

¹ "It is certainly remarkable that there should have been seven cases published from the small town of Buda-Pesth with its 200,000 inhabitants; whilst from London and Paris, with their 5,000,000 inhabitants, only six cases have been as yet recorded."

"* * * The thyroid cartilage should then be most carefully divided by a succession of small nicks, with a short, strong, sharp-pointed knife; but if ossification have taken place, the opening must be effected with a small circular or convex saw. The instrument should not be allowed to penetrate the larynx until the whole of the cartilage is divided.¹ By this method the paroxysms of coughing, which otherwise interfere with the operation, are often avoided."

It is recommended not to divide the cricoid cartilage.

"* * * If the cricoid cartilage has been divided, the [tracheal] tube is likely to be constantly pushed up against the thyroid cartilage in coughing, and this pressure is almost certain to interfere with the proper union of the two parts of the thyroid cartilage. Krishaber justly remarks that division of the cricoid cartilage is altogether *unnecessary*; for whilst, on the one hand, it does not facilitate the removal of growths above the vocal cords, those below the glottis can be easily removed either through an opening in the crico-thyroid membrane or the trachea."

"*Comparative merits of Thyrotomy.*—Unlike the operation conducted *per vias naturales*, in being unattended with danger to life, or risk of destruction of function, the procedure now under consideration is a very serious one. Its results will be best appreciated by an investigation of the annexed table."

Here follows a "Thyrotomy Table, showing results, as regards life and voice, in all cases of laryngeal growth, whether malignant or benign, in which thyrotomy was performed." The date of the last case is 1869. Of the 28 cases recorded, 9 terminated fatally, while in three others alarming symptoms either attended the operation or immediately followed it.

No case of death from the laryngoscopic treatment of neoplasms is, we believe, yet recorded.

As respects the condition of the voice after thyrotomy, of the 17 patients who survived for some months, and in whose cases the result is given, "5 suffered from permanent aphonia, 4 from persistent hoarseness, and 8 completely recovered the voice."

"In my 93 cases in which internal treatment was adopted, the voice was entirely restored in 75 instances, and in 15 there was improvement of the voice."

As regards the recurrence of growths—

"On analyzing the thyrotomy table, it appears that 4 cases rapidly terminated fatally, and therefore gave no time for recurrence. In 6 other cases the patient died at the end of a few months, and in nearly all of these recurrence had taken place. They were all, however, of malignant or semi-malignant character, and therefore the tendency to reproduction was no doubt very great. Of the remaining 18 cases, in one the growth could not be extirpated at all, owing to its close incorporation with the subjacent tissues; and in two others the neoplasm was incompletely removed. In addition to these cases of incomplete extirpation, which would be much more numerous if the fatal cases were not eliminated, recurrence took place in two cases in less than a month, and in one case at the end of two years.

"In my 93 cases, treated through the fauces, recurrence took place in 6 cases in which the growth had been previously completely extirpated. In several of these cases the recurrence did not take place till a year or two after evulsion had been effected; and in most cases the neoplasm occurred in different situations to that which it had previously occupied.

"In three cases in which incomplete evulsion was effected, but the symptoms were relieved, the growth after a time underwent further development, and

¹ "This precaution is justly insisted on by Krishaber and Planchon (*Faits Cliniques de Laryngotomie*. Paris, 1869, p. 93)."

again necessitated treatment. In one case continuous growth has taken place. It will be seen, therefore, that thyrotomy does not even effect such complete evulsion as laryngoscopic treatment."

In making this comparison between the results of the treatment of growths by thyrotomy and by the aid of the laryngoscope, it must be remembered that the thyrotomy table includes both benign and malignant neoplasms, while the table of Dr. Mackenzie contains those of a benign nature exclusively. A comparison in relation to life can only be made by taking into the account those cases of thyrotomy alone in which death ensued as the immediate result of the operation. From this number it might be fair to exclude also those cases in which, from the nature of the growth, exceptionally heroic means were employed, like the extensive use of the actual cautery, for example, if there were such instances. In any event, however, the result must be unfavourable to thyrotomy, if no death has resulted as the effect of laryngoscopic treatment.

A comparison of the results in relation to recurrence and to voice can hardly be fairly made at all, even if, as should manifestly be done, the cases of malignant disease in the thyrotomy tables be thrown out, inasmuch as a certain number of the remaining cases submitted to thyrotomy were growths which offered little prospect for successful laryngoscopic treatment. The fairer way would be to select those cases which offered a reasonable chance of successful treatment *per vias naturales*, but which were submitted to thyrotomy, either from a mistaken judgment on the part of the practitioner, or from an unwillingness on the part of the patient to undergo laryngoscopic treatment. The present paucity of such cases would probably make the estimate practically valueless; but if sufficient material were available, we are inclined to believe that thyrotomy would still appear unfavourably as regards the voice, but favourably as regards recurrence. But even with this possible evidence in its favour, thyrotomy can hardly claim more merit for itself than is awarded it by Dr. Mackenzie. It should be the last of all the methods resorted to in cases of benign growths. Indeed, for reasons which we shall presently bring forward, we doubt if the operation, except in rare instances, ought to be resorted to at all in papillomatous tumours. Some one of the methods to be subsequently referred to would undoubtedly be found practicable, generally.

Removal of Growths by Division of the Thyro-Hyoid Membrane, or Supra-Thyroid Laryngotomy.

"This method of treatment is indicated for the removal of large growths situated at the upper orifice of the larynx, which cannot be taken away *per vias naturales*."

Only two cases are recorded in which growths have been removed by this method, those, namely, of Dr. Pratt and Dr. Follin. Dr. Pratt operated according to the instructions of Malgaigne, making a transverse incision through the thyro-hyoid membrane along the lower border of, and parallel with, the hyoid bone, dividing the soft tissues lying beneath, and reaching the throat through the glosso-epiglottic ligament, the fold of mucous membrane which extends between the base of the tongue and the epiglottis. The epiglottis is then seized and drawn through the wound, and the growth removed by a suitable instrument.

Dr. Follin made his incision about one-eighth of an inch above the upper border of the thyroid cartilage, in order, as he says, to avoid section

of the base of the epiglottis, below which the opening into the throat was made.

Comparative Merits of Operation.—Although sub-hyoid laryngotomy is unattended with any considerable danger, either immediate or remote, I do not think that it will find much favour with those skilled in operating with the aid of the laryngeal mirror; for it happens that those cases which are favourable to the performance of this operation are just those which, as a rule, can be most easily treated through the mouth."

Removal of Growths by Infra-Thyroid Laryngotomy (through the Crico-Thyroid Membrane), or by Tracheotomy.

"This operation is recommended for the removal of laryngeal growths situated in the sub-glottic region, as well as for tumours in the upper part of the trachea, when, in such cases, laryngoscopic treatment cannot be carried out.

Method of Procedure.—An incision should be made as in ordinary (cricothyroid) laryngotomy, but the crico-thyroid opening should be carefully dissected out, and all the membrane, muscle, and superficial parts removed, so that nothing is left but the two cartilages surrounding the opening, and a canula inserted a few days before evulsion is attempted. When all disposition to hemorrhagic oozing has ceased, and all tenderness disappeared, the canula should be taken out, the chin thrown well back, so as to enlarge the crico-thyroid space as much as possible, and a careful examination made with one of Neudörfer's infra-glottic mirrors, to ascertain the exact origin of the growth. The mirror must then be dispensed with, and the growth removed with short tube-forceps.

"This operation can only be performed where the crico-thyroid membrane is of average size, and, if there is not room to effect removal, tracheotomy should be performed in the first instance, instead of laryngotomy. * * *

"The patient should continue to wear the canula for a few months, or, at any rate, for a few weeks, in case eradication be incomplete, or recurrence take place."

Only two instances of this operation which our author is inclined to favour, are given; one by Dr. Burow, of Königsberg, in 1865; and the other by Dr. Mackenzie himself, in 1869.

"It is very remarkable that this operation has not been more frequently performed. In my 100 tabulated cases the growth was situated ten times below the vocal cords. In three of these cases evulsion was effected with great difficulty, and only after several months' close attendance. In two of them, indeed, the success was incomplete, a small portion of the growth remaining, and the voice being still a little hoarse. In the cases tabulated in Appendix D, the growths were, in 15 cases, situated below the vocal cords. In five of these thyrotomy was performed, and in two the less serious step of tracheotomy was necessitated, before the growth could be removed through the fauces. There is little reason to doubt that in many, if not all, of these cases, had an opening been made in the crico-thyroid membrane, the treatment might have been reduced to a few days, or at the most a few weeks, instead of lasting, as it did, several months, and that it is possible the results would have been altogether more satisfactory."

The Combined Method of Removing Growths (Tracheotomy or Laryngotomy being first performed, and the Growth being subsequently removed by Laryngoscopy).

"This method of treatment may be advantageously carried out in those cases in which the size of the growth causes immediate danger to life, and where laryngoscopic treatment gives rise to serious dyspnoea.

"It has already been remarked that operative procedures on large growths are apt to give rise to inflammatory tumefaction of the mucous membrane, and to spasm of the glottis; and in three cases which have come under my notice,

partial evulsion, or attempts at evulsion, through the upper orifice, have precipitated tracheotomy. In these cases, it would perhaps have been as well to have opened the windpipe in the first instance, and only subsequently to have attempted removal through the mouth. Where the combined method of treatment is adopted, the patient should be allowed a few days' rest after tracheotomy has been performed, and only when thoroughly recovered from the operation should eradication be attempted with the aid of the laryngoscope. * * * Only when the growth is completely eradicated, should the canula be removed.

"This method of treatment holds a middle place between laryngoscopic and extra-laryngeal treatment, and while, on the one hand, the practitioner should always first endeavour to remove a growth through the fauces, it is better, if he does not succeed, to adopt the operation of tracheotomy as a safeguard, and then to pursue laryngoscopic treatment. If then he is still unable to remove the growth through the mouth, he may proceed to the more serious operation of thyrotomy. In my own practice I have successfully employed the combined treatment in two cases. In two others it became necessary to perform tracheotomy on account of the difficulty of removing the growth *per vias naturales*, and, the respiration being relieved by this operation, no further treatment of the neoplasm was permitted.

"The combined method has been frequently pursued on the Continent and in America, and 11 cases are contained in Appendix D. Of these, 5 were cured, and in the remaining 6 the dyspnœa was entirely relieved and the voice improved. It will thus be seen that the combined method offers very satisfactory prospects."

We have quoted somewhat liberally from the portion of the Essay which relates to extra-laryngeal treatment, because the instructions contained therein seem to be eminently judicious. There is a natural disposition on the part of the practitioner to hasten results by extra-laryngeal treatment, if the individual exhibits great impatience to be rid of his difficulty. Should the operative procedure resorted to be either infra-thyroid laryngotomy or tracheotomy, or the combined method, there would be less reason for regret. But, as our author intimates, thyrotomy has undoubtedly been performed where simpler means would have availed; and these may sometimes be needlessly resorted to. No case could present better indications for infra-thyroid laryngotomy than the sub-glottic polypus, in the child under our care, already referred to, and in which the result hoped for, and even promised to the parents, occurred, namely, the spontaneous evulsion of the growth.

We had hoped to find, in this part of the Essay, confirmation of an opinion we have for some time held in relation to the treatment of extensive laryngeal growths in young children, but which a limited experience does not justify us in putting forward with too much confidence. We are inclined to the belief that, when such cases appear, if tracheotomy should become necessary to avert suffocation, the permanent wearing of the canula should be the method of treatment adopted. We believe that there are weighty objections to thyrotomy either immediately after tracheotomy or at a more remote period, and that it is not worth while, either, to attempt removal through the fauces at any subsequent time, even if the docility of the patient should render this practicable.

The ground for this opinion is chiefly the belief that the papillomatous growths have, in most cases, a natural limited period of existence; that the disposition of the mucous membrane to produce them ceases after a certain period of time, longer or shorter; and that, while this disposition exists in any marked degree, attempts at the removal of the growths by

any method of operating will not only fail, but will often stimulate their further development.¹

There are also the serious objections that thyrotomy implies more or less danger to life, and that the operation itself and the attempt to remove extensive growths in so small a working space as the young larynx greatly endanger the integrity of the vocal apparatus, especially when, as is so often the case, the vocal cords are the seat of the neoplasms.

We infer from what Dr. Mackenzie says in regard to the danger of thyrotomy in relation to life and to voice, and in regard to the difficulty of removing, completely, growths of multiple development, that his only objection to the proposed plan would be the liability to disease of the tracheal cartilages from the pressure of the canula, and to dysphagia if great increase in the size of the neoplasm should take place. Now, as regards the chance of dysphagia, much depends, doubtless, upon the site of the neoplasm. The glottis may be manifestly completely occluded by growths without dysphagia being induced; but we have seen the whole interior of the larynx filled with a "raspberry" papilloma, which even rose considerably above the superior aperture of the organ, and which did not induce any dysphagia whatever. We imagine that the soft and yielding nature of these growths would, very generally, prevent any serious dysphagia.

As regards the liability to disease of the cartilages, we have seen this accident threatened in several instances, but have as often seen it completely averted by a change in the shape or the length of the tube. It would seem, therefore, if what we have said be true, that it is a question between probable, immediate and possible prospective dangers.

If the above view of the treatment of growths in young children has been previously presented, we have not met with it. Without doubt the palliative method has been forced upon the practitioner by circumstances, and a favourable result may have been recorded, but we have not seen this method, which we prefer to term the expectant method, urged by any author from his confidence in the self-limited nature of the growths.

How far the expectant plan may prove serviceable in the papillomatous growths in adults we are not prepared to say, but we think it worthy of a trial where, from their exuberance or multiple character, intra-laryngeal treatment fails to keep the growths in check. We have had one such case. Tracheotomy, fortunately, has not been necessary, and the gradual spontaneous subsidence of the neoplasms is progressing favourably.

In this connection one of our author's cases in the "Reports," Appendix A., No. 45, also referred to by him in speaking of the "Combined Method," may be interesting.

The patient was a woman, æt. 30, who was admitted to the Hospital for Diseases of the Throat, in June, 1867, "on account of great dyspnoea, accompanied with aphonia. The aphonia had existed three years, but the dyspnoea only a few weeks. The patient was pregnant. On laryngoscopic examination, both vocal cords were seen to be covered with large cauliflower excrescences. The mass on the right vocal cord grew upwards, and com-

¹ In this, as in some other respects, the papillomata of the larynx resemble the warts so often met with upon the hands, especially in children. It is well known that while the disposition to their production continues, it is very difficult to destroy any individual wart, and impossible to prevent new examples from making their appearance. They, however, generally disappear spontaneously, and sometimes so rapidly as to leave little doubt that the skin has lost a certain idiosyncrasy.

pletely occupied the right half of the cavity of the larynx." Several large pieces were removed by Dr. Mackenzie with the tube-forceps, "but the patient was obliged to leave the hospital in the early part of September, her general condition at the time rendering further treatment difficult. On the 24th of November her respiration was so seriously embarrassed that Mr. De Berdt Hovell, of Clapton, performed tracheotomy. She recovered well, and was delivered of a stillborn child, January 4, 1868." Under date of April 5, 1870, Mr. Hovell communicated to Dr. Mackenzie the following notes of her condition: "Her present condition is pretty well. The tube is still in; she has recovered her voice, although not its full power; she has been confined, as you know, of a dead child, since the operation, and is expecting her confinement again next month."

This seems to be a most instructive case. It is very probable that this patient would have been subjected to thyrotomy by some practitioners when suffocation threatened. Dr. Mackenzie would undoubtedly have employed the "combined method," which would not have been injudicious treatment. Meanwhile, circumstances compel an expectant course, and the voice is finally restored. What the exact condition of the growths was at the date of Mr. Hovell's communication is not stated, but inasmuch as they originated from the vocal cords, it seems certain that they must have very materially diminished, if they had not entirely disappeared, and that the retention of the tube was not really necessary.

Following the text proper of the Essay, come in succession the "Reports" of the author's one hundred cases, "Short Reports of a Few Cases in which Radical Treatment was not adopted," the two "Tables," one made up from the author's cases, and the other from the published cases of other practitioners, and, finally, the lithographs and chromo-lithographs. A full index terminates the Essay, which can hardly fail to increase Dr. Mackenzie's already honourable position as an accomplished laryngologist and instructor. We trust that the work will find readers, not only among physicians especially interested in the subject of which it treats, but among general practitioners as well. They will find it particularly free from the technicalities which often make works on special subjects dull reading.

There are one or two awkward sentences from faulty punctuation, and a number of errors in orthography, which may properly be credited to the proof-reader. The paper and presswork (by Wyman and Sons, London) are excellent, as are also the lithographs, chromo-lithographs, and wood-engravings; some of the latter remind one, in respect to style, of the superb cuts in Türk's "*Klinik*."

We are sorry not to be able to praise, without reserve, the American work connected with the issue. The binder's share has been poorly executed; our copy, at all events, showed palpable signs of weakness after very little handling. Again, annexed to the Essay are 40 pages of advertisements of the publishers' medical publications, greatly disfiguring what would otherwise be a handsome volume. Such an addition might be tolerable in a copy in paper, but the custom which some publishers have, of permanently binding their catalogues with their books, ought, it seems to us, to be discountenanced. The addition of 20 leaves to every volume in a physician's medical library might seriously crowd his shelves. Our only consolation, in contemplating the gradual dismemberment of our copy, is that these incompatible parts, which ought never to have been joined, will then be put asunder.

H. K. O.

ART. XXI.—*Traité Pratique des Maladies de l'Utérus et de ses Annexes.*

Par A. COURT Y, Professeur de Clinique à la Faculté de Médecine de Montpellier. Paris, 1866.

A *Practical Treatise on Diseases of the Uterus and its Appendices.* By A. COURT Y, Clinical Professor in the School of Medicine of Montpellier. Paris, 1866.

M. COURT Y's introduction to his work is an interesting and thoroughly appreciative review of the history of gynæcology. The retrospective sketch which he gives us of this department of medicine discovers an unusually accurate acquaintance with its literature, and is remarkable for the judgment and impartiality with which it is drawn. The influence of pathological anatomy, of the extended use of the speculum, and of the discovery of the laws of menstruation, are instanced as having formed the basis of the progress that has been made in uterine pathology. He very cleverly examines the influence of the example of Lisfranc on the practice of amputation of the cervix uteri, and of that of Jobert in the use of the actual cautery to this part, and he conspicuously alludes to the teachings of Henry Bennett, who attributed nearly all diseases of the uterus to inflammation, and to those of Velpeau, who ascribed to displacement of the uterus the principal cause of its diseases. Court y, in his notice of the foreign literature of the subject, calls particular attention to the very important contributions of Simpson, Kiwisch, Wagner, Scanzoni, Grenser, Seyfert, and many others, and, in alluding to ovariectomy and the American operation for vesico-vaginal fistula, accords to our country a just meed of praise. In his remarks on the French works of Nonat, Aran, Bernutz, Becquerel, and others, he justly observes that the work of Becquerel is entirely wanting in originality. Our author ends his introduction with these words of Montaigne: "C'est icy un livre de bonne foy." Truly, every page of M. Court y's treatise bears evidence of conscientious and painstaking effort.

This treatise contains eleven hundred large pages of rather closely printed matter, and is handsomely illustrated with two hundred and forty woodcuts. The work is divided into two parts. The first part comprises five chapters of preliminary remarks on anatomy and physiology, two chapters on the diagnosis of uterine diseases in general, three on their treatment, and one on their general characters. The second part treats of particular diseases of the uterus: 1st. Functional disorders, such as amenorrhœa, dysmenorrhœa, etc., preceded by an excellent chapter on menstruation. 2d. Morbid conditions unattended with new formations or neoplasms, such as congestion, inflammation, leucorrhœa, hypertrophy, atrophy, etc. 3d. Uterine displacements. 4th. Organic changes either homologous or heterologous in character, as fibrous tumours, polypi, cancer, and tubercles. 5th. Diseases of the uterine appendices, as peri-uterine hæmatocele, ovarian cysts, etc., followed by a chapter on sterility, and by an appendix on diseases of the vagina and vulva.

The first chapter relates to the descriptive and topographical anatomy of the uterus; the second is a very creditable article on the development and anomalies of that organ. The entire absence of the uterus is exceedingly rare, in fact there is nearly always a rudiment of it. If we were to trust to our sensations as obtained by a most thorough and careful exploration on the living subject, we should affirm that we have met with at least one case of complete absence of this organ. Court y, in a foot-note (p. 33),

alludes to an important unpublished work by Puech, based on 150 cases of congenital absence of the uterus, which he divides into real and apparent absence; that is, real absence when a post-mortem examination fails to show the slightest trace of a rudiment of the uterus.

The third chapter is a valuable and interesting one on the difference of the uterus at different ages. Those who are not so fortunate as to possess, or have access to the publication of Guyon,¹ on the cavities of the unimpregnated uterus, will find in this chapter a good but partial abstract of this much cited work. The fourth chapter is on the structure of the uterus. The uterine mucous membrane is described with care. The memoir of Coste, the article of Robin in the *Arch. Gén. de Médecine* on this subject, and the monograph of Tyler Smith on leucorrhœa, have, with other important publications, furnished matter for this chapter.

The first part of Courty's work is a complete treatise on general uterine pathology, preceded, however, by instructive remarks on anatomy and physiology, that compose the first five chapters to which we have alluded. In our judgment, this arrangement is eminently proper, and contrasts most advantageously with the unsuitable haste with which in some treatises on gynecology the student is guided to the study of particular diseases of the uterus without due previous preparation. There is, generally speaking, a thoroughness and a certain originality about M. Courty's work that particularly recommend it. What he relates concerning errors of diagnosis in diseases of the uterus will not astonish those who have given more than a casual attention to this subject. Our author observes that he has seen palpable mistakes made in the diagnosis of this sort of diseases by physicians of extensive reputation, and that these mistakes would appear incredible to him had he not been witness to them. For instance, he has seen a woman accused of having had children, in whom the cervix was conical enough to induce the belief that she was sterile. He has known women with leucorrhœa to be accused by renowned specialists of having blennorrhagia, and the peace of a family destroyed by these errors of diagnosis. We must admit that such errors are possible, but we think that only a very inconsiderate haste would lead a competent specialist into such blunders. In such matters it is the part of discretion on such occasions to keep our doubts to ourselves. There is a source of vaginitis from the use of irritating applications which may seriously perplex the most careful practitioner. We have repeatedly known an application of strong iodine to the cervix to produce a most intense vaginitis, quite likely to cause urethritis of the worst kind in the unsuspecting husband. It is invariably our custom, after such applications, to warn the patient of the possible occurrence of this accident, and to urge her to abstain from sexual relations. We regret to observe in Courty's otherwise admirable treatise a prolixity which is the fault of most French writers. Our author makes some extended remarks on the nervous troubles incident to uterine diseases. He discusses the relations of hysteria to disease of the uterus. He asserts that the symptoms of hysteria are quite unfrequently the direct expression of uterine disease. He observes that hysterical manifestations are the result of the reflex action of impressions on the medulla or the brain, and that these impressions have their starting-point in the irritation of some other organ than the uterus, generally the genital organs. We believe that Briquet has endeavoured to disconnect the symptoms of hysteria from those which properly

¹ *Études sur les Cavités de l'Utérus à l'État de Vacuité.* Thèse de Paris, 1858.

distinguish disease of the uterus. It is quite certain that a large number of hysterical patients have no appreciable disease of the uterus, and that hysteria is sometimes observed in men, as shown by Briquet and others. The relations, however, of this disease to disease of the uterus are by no means exactly determined. There are many hysterical patients treated for womb disease who should be let severely alone. Indeed, it is to be regretted that these patients not unfrequently take rather kindly to the idea of uterine disease in connection with their nervous troubles, and are willing to have operations performed on them that real sufferers from disease of the uterus would sometimes recoil from. It may be a question of some practical importance to determine the difference between hysterical paraplegia independent of any uterine disease, and a reflex paralysis of the lower extremities due to disease of the womb. Court alludes to two cases which he saw, one of hysterical paraplegia, and the other of uterine paraplegia. After having been a long time in doubt respecting the difference of these two forms of paralysis, he is now, he says, convinced of their dissimilarity. It is apparent, he further remarks, that a reflex paralysis having its origin in the uterus should especially affect the lower extremities.

Court's remarks about the semeiological value of the local symptoms of uterine diseases, when speaking of them in a general manner, are instructive, but quite prolix. His explanation of the comparative frequency of pain in the left iliac region is that it is due to traction on the broad ligament of that side, and is occasioned in the same manner that pain is frequently caused in the lumbar region by strain on the utero-lumbar ligaments. The normal inclination of the uterus forward and to the right side is exaggerated from increased weight of the organ during its congestion or disease, and painful traction of the broad ligament of the left side will be the consequence.

The intensity of pain in diseases of the uterus generally is insisted upon; as, for example, during the earlier stages of cancer of the womb, this disease is often far advanced before the patient complains of pain; and then, again, simple cervical catarrh or endocervicitis is attended with considerable distress in the pelvic organs. These and some other details given by Court about the menstrual function are important and useful to the practitioner and student. There are some tiresome remarks about the manner of examining a patient, which it would have been better to omit. It would generally be preferable to leave much of such matters to the good sense and discretion of the physician. However, the proper position of the patient is a matter of importance, and a description of such should not be altogether neglected. The touch is rightly insisted upon as the first and one of the most valuable of all means of physical exploration of the uterine organs. He alludes to the use of the speculum as having caused neglect of the touch. We take this occasion to dissent from the exaggerated opinion which is sometimes expressed about the value of the vaginal touch in the recognition of a granulated or eroded condition of the os and cervix. We have known an eminent gynæcologist to make an erroneous diagnosis of erosion or ulceration of the cervix, by relying too confidently and exclusively on this mode of exploration. Court recommends the vaginal touch to be made by passing the hand underneath the patient's thigh nearest to the examiner. This is, in our opinion, an exceedingly awkward manner to examine a patient. Court blames Scanzoni for proposing to use the rectal touch in virgins. Our author alleges that this mode of examination is much more revolting to virgins than the vaginal touch. However this may be, we know that practically it is more expeditiously made, and with far less

trouble, than any attempt at vaginal exploration. Nothing but the most absolute exigency will justify even an intimation to a virgin of the need of such an exploration. At least it would be well for the physician to believe such to be the case. We have several times had recourse to the rectal touch in such circumstances, to our entire satisfaction. Before the patient recovers from her surprise, the examination is completed. While the index finger of one hand is in the rectum, strong downward counter-pressure on the abdomen should be made with the other hand. Besides, the rectal touch is more useful in recognizing a recto-uterine hæmatocele than the vaginal touch.

To the American physician acquainted with the different and important modifications which Sims's speculum has undergone within the past few years, M. Courty's remarks on the speculum will appear incomplete. Possibly no attempt would be attended with more embarrassment than to designate a single speculum which shall meet all the requirements of practice. Indeed, such would be quite impossible. Courty attaches a just value to the conical and cylindrical specula, and speaks favourably of Sims's speculum. He describes at considerable length the manner of introducing the speculum. For the use of the ordinary conical or cylindrical speculum of Fergusson, to which his remarks especially apply, we think that two important points should be more insisted on, to the exclusion of a prolixity of details which are somewhat fatiguing; these two points are: 1st. The previous introduction of the finger, to ascertain the position of the cervix; 2d. The separation of the labia, and the rather forcible depression of the perineum, as the instrument is made to penetrate the vagina with a slightly rotating movement. As an experienced auscultator usually applies his ear to the chest before percussing it, except in the case of timid or fretful children, so should the gynæcologist usually introduce his finger into the vagina, to learn the individual peculiarities of the vagina and cervix, and the position of the latter, before inserting the speculum.

The mode of manual exploration known as "conjoined manipulation," together with the use of the speculum and uterine sound, are the principal means for making a correct physical examination of the uterus, and have opened the way for the progress which has been made in gynæcology during the last two decades.

The bivalve speculum of Ricord, modified by Charrière, so as to have two supplementary valves, removable at will, is, according to Courty, the most convenient speculum that can be procured. This opinion, we feel confident, will not be shared by most gynæcologists in this country. It is difficult to say which speculum is the best. A physician of some dexterity, accustomed to the use of a very sorry instrument, will handle it better than an inexperienced practitioner can the best. We are pleased to observe that M. Courty makes the remark, that the introduction of the speculum, to be done in an entirely satisfactory manner, is not so easy as those may think who are not in the habit of making examinations with the speculum. To acquire proficiency in these manipulations, he even recommends the novice to practise on the cadaver. Such, however, is not necessary, and may be quite inconvenient or impossible at times, and would never be so instructive as on the living subject.

We believe that the gynæcologist cannot, in the general treatment of uterine complaints, confine himself advantageously to the use of a single form of speculum. We are in the habit of using, under different circumstances, three different specula, which are Fergusson's cylindrical glass

speculum, Sims's duck-bill, and Nott's self-retaining speculum. With these three specula we believe ourselves to be quite well provided for all cases which require the use of a speculum. We have never attempted to add to the armamentarium of the instrument-makers by an endeavour to invent one. One reason why we think that so many different specula have been devised of late years is that each inventor has tried to adapt his instrument to the peculiarities of all cases. This, we believe, has thus far been found to be quite impracticable. The same remarks may be made with regard to the uterine sound. It would be quite as unreasonable to expect to make available in every case Furguson's speculum, as to suppose that Simpson's inflexible sound or Sims's flexible silver probes will answer in every case. A wax bougie, or a gum-elastic catheter containing a metallic or whalebone stylet, is occasionally available in uterine explorations. With the self-retaining speculum of Nott or of Bozeman, or with the speculum of Sims or of Thomas, traction can be made on the cervix, with a proper form of tenaculum hooked into the os, so as to facilitate, in difficult cases, the entrance of the sound into the uterine cavity. As catheterization of the male bladder is aided by traction on the penis, so is the sounding of the uterus in some cases much facilitated by traction on the cervix with a tenaculum. For operations on the anterior wall of the vagina, Emmet's speculum is excellent. The depression of the perineum is regulated by means of a peculiar adjustment, aided by a suitable contrivance for making counter-pressure on the gluteal region. We have insisted at considerable length upon these particulars about the speculum, because we think that Courty's remarks on this subject are incomplete. The eminently practical and instructive character of Courty's treatise, and the exhaustive manner in which he has handled most of the subjects of uterine pathology, make his book an exceedingly valuable addition to the existing treatises on diseases of women.

Courty's remarks on the history and manner of using the uterine sound are interesting. He observes that—

"It is probable that the idea of introducing a sound into the cavity of the uterus to measure its depth and to explore its surface is not new. During the last century Levret sounded the uterus with a whalebone stylet. In 1828 Lair introduced into the cavity of the cervix Larry's grooved probe or sound, the extremity of which he curved gently like a female catheter, and he even recommended that the speculum should be withdrawn about a third, and that it should be lowered as much as possible, to facilitate the penetration of this sound from the cavity of the neck into that of the body of the uterus."

Without knowing that Lair had given such explicit directions concerning the manner of introducing the uterine sound, we published about three years ago, in the *New York Medical Journal*, an article on ancient and modern specula, and in which we alluded very much in the same terms to the facility with which the uterus may be sounded through the cylindrical speculum of Furguson. We have, by the observance of rules similar to those pointed out by Lair, been able to introduce into the uterus a sound, properly curved, through the cylindrical speculum, in some cases in which there was even considerable ante flexion, and contrary to the opinion of experts. We mention this merely to show what may be done with a speculum which is probably in more general use than any other.

To sound the uterus without the aid of the speculum, Courty recommends that the patient be placed on the left side. He gives at length very minute directions how to pass the sound to the fundus of the uterus. By

carefully following M. Courty's instructions, and after some practice, it would not be difficult, in most cases, to sound the uterus. But that which appears so exceedingly simple to an expert like M. Courty, is frequently very difficult to a practitioner who probably sees only a few cases of uterine disease in the course of a year. There are gynæcologists who expertly sound the uterus without the aid of the speculum, but for medication of the uterine cavity, and probably in most cases in which the sound is used as an exploring instrument, the speculum is indispensable. To fix the cervix, and gently draw it down with a suitable tenaculum, in certain cases, is an invaluable aid to the use of the sound. M. Courty makes no allusion to this way of facilitating the introduction of the sound. We frequently resort to it, and believe that the use of the sound, for exploration, medication, or dilatation of the uterine canal, especially in cases of flexion, or of a tortuous state of the supra-vaginal portion of the cervical canal, can be sooner and more expertly acquired in this manner than in any other. For this purpose, however, we prefer Nott's speculum to all others, because it is an excellent self-retaining instrument, and because, possibly, from daily use, we are familiar with it. It should have a wing-screw, and not a button-screw; the wire extension piece should be retained, as well as the other extension pieces; and the two smaller branches should be fastened to the wing-screw piece by means of stout wire rods, and not with chains.

We have detained the reader with these particulars about the proper use of the speculum, and uterine sound, because they have been omitted by M. Courty; but, notwithstanding such an omission, we are convinced that his treatise will be read with much satisfaction and profit by those who are interested in a thousand and one little practical points, which are generally only to be learned by a fatiguing experience, and which are usually not alluded to or sufficiently explained in other works on diseases of women.

We will further add, that the importance which we attach, in a work on the diseases of the uterus, to a thoroughly practical chapter on the vaginal touch, the "conjoined manipulation," the use of the speculum, and uterine sound, will be readily appreciated, when it is understood that these methods of examination, used separately or conjointly, are quite necessary to a successful study of uterine diseases.

Few can read without instruction the judicious advice which he gives concerning the counter-indications to the use of the sound. He very properly, we think, condemns as useless the different kinds of intra-uterine specula. He likes gradual dilatation with dilating bougies or sounds, and speaks favourably of sea-tangle tents as a means of facilitating exploration, as well as a means of treatment.

Courty's remarks on the constant association of general with local treatment are extended, but full of good sense. They are summed up in the following words:—

"Constantly I see patients whose treatment, according to the special medical or surgical tendency of the physician, consists exclusively in the use of general or local means.

"After the inefficacious use of one or the other of these means exclusively, I every day verify the constant success which follows their conjoined use."

In the diagnosis and treatment of uterine diseases, he evidently does not confine his attention to the uterus. He impresses on us the necessity to be alert in the detection of diatheses, and their influence on uterine complaints, and prompt to discover the relation of disorders of other and remote

organs to disease of the womb. He insists much on the importance of not medicating the uterus inopportunistically—that is, neither too soon after or before the menstrual periods; and he instances the unseasonable application of leeches. These are very useful in certain cases, but are attended with so much inconvenience, and are so repulsive to the patient, that, we think, local depletion made with Buttle's little gilt spear, and aided by the injection into the vagina, through the speculum, of warm water, is much preferable, and quite as effectual, in most cases.

As a general rule, says M. Courty, "leeches should not be applied to the cervix the week which precedes the menstrual flow. The application of some other remedies at this period is also often productive of harm." We readily concur in the latter remark; but we have observed sometimes the most marked advantage to follow the application of leeches to the cervix just before the expected time of a painful menstruation.

In his remarks on bloodletting in uterine diseases, he alludes to it as a revulsive "that may be of great utility in cases of metrorrhagia; or, better still, of active menorrhagia; also in cases of imminent and great congestion of the uterus." We believe that, in some conditions complicating uterine disease, the occasion may sometimes arise when, as a matter of extreme urgency, blood may be most advantageously abstracted from the arm, and we are of those who still recognize bloodletting as a valuable therapeutic resource, not to be entirely discarded. But we think that most of our readers, even uninfluenced by the prevailing fashion to decry bloodletting, would, in active congestion of the uterus, preferably resort to other depletory and revulsive measures than the use of the lancet.

We must acknowledge that we do not quite comprehend the practical distinction which Courty endeavours to establish between congestion and the conditions which he calls "fluxion." Practically, however, we believe he is right to insist on the usefulness of cutaneous or intestinal revulsives, when resorted to soon after depletory medication of the cervix uteri.

Courty, in general terms, gives great importance to the proper use of hydropathy. He briefly points out the importance of distinguishing the indications which call for its use from those that forbid it. It is essential to know when and how to use it, locally or in a general manner. The sedative, the tonic, and the revulsive action of cold water, in its different applications for the cure of womb diseases, should be separately considered.

We are not aware that any writer on gynæcology has pointed out, in a clear manner, the several indications and counter-indications which are to be followed in the use of hydropathy as an aid to the treatment of diseases of the uterus. We do not think that Courty has succeeded in this respect, though he has indulged in some interesting generalities. He says that it should be recollected that the principal object to be obtained by hydropathy is an impression of cold, followed by a reactionary heat of the skin; that cold water and hot air, to use Fleury's words, form the basis of hydropathy. The remarks which follow are suggestive, but do not, we think, designate with sufficient distinctness any general principles which can be safely applied; unless, as he remarks, that hydropathy ought never to be resorted to in acute diseases of the womb, nor in chronic disorders of this organ of a subacute character, liable to a recurrence of acute inflammatory symptoms. It will at once be perceived that the difficulty and danger of accurately discriminating in some such cases must considerably lessen our confidence in the right use of an agent capable of such potent evil or good.

The periodical congestion to which the uterus is subject, makes the diseases of this organ peculiarly liable to inflammatory exacerbations; and the revulsive or sedative effect of cold water might sadly disappoint our expectations, when we are least apprehensive of such a result. We are thoroughly convinced, however, of the excellence of this agent in the general treatment of uterine complaints, but we prefer, until the indications are more accurately defined, to limit our use of cold water to the moistening of the skin, to be succeeded by brisk frictions, which alone are sufficient to produce a beneficial reactionary warmth. We all know the influence on a horse of a thorough grooming, and however inappropriate it would be to apply such a term to a delicate, refined, and highly impressionable young lady, of elegant leisure and indolent habits, the plain facts of the case are, that, nine times out of ten, whether she have a chronic disease of the uterus or not, moderately cold affusions, followed by the brisk use of a coarse towel, will do her good. There are certain uses of cold water, to which M. Courty alludes, that are especially worthy of notice, as, for example, the sedative effect of cold wet cloths, covered with oil-silk, applied to the hypogastrium, and left in place from eight to twelve hours. Such applications should be made in summer only. He also alludes to the sedative effect of injections of small quantities of cold water, thrown up the rectum at night, and retained.

We desire especially to allude to the practice of several physicians of New York, and especially of Dr. Emmet, at the Woman's Hospital, in the use of large quantities of hot water injected into the vagina at night, as hot as the patient can bear. These vaginal injections of hot water have a remarkably soothing effect in cases of great irritability of the vagina and uterus.

Against neuralgic pains, he enthusiastically recommends the hypodermic injection of sulphate of atropia. We prefer the sulphate of morphia, as more reliable, and attended with less inconvenience subsequently. We have several times known the sulphate of atropia, in the dose of one-fiftieth of a grain, taken internally, to produce distressing dryness of the mouth and throat, with giddiness, and other characteristic toxic symptoms. We have not the same objection to the extract of belladonna, when used in the form of a pill, associated with other sedatives. Belladonna, in combination with camphor, it is well known, exercises a peculiarly soothing effect on the diseased and painful uterine organs. A preparation which we are much in the habit of prescribing is the extract of hyoseyamus combined with camphor and cocoa butter, and made into a small round vaginal suppository. The combination of tincture of hyoseyamus with a solution of bromide of potassium, adds greatly to the sedative effect of the bromide. The derivative and revulsive action of blisters in chronic peri-uterine inflammation is favourably commented upon. In our experience, there is no mode of treating this affection so effectively as by the frequently repeated external application of blisters.

He makes some lengthy remarks on the use of pessaries. At best, this is a most perplexing subject, to which he has added nothing particularly worthy of note, except a case of death, which he observed to follow the use of Valleix's intra-uterine pessary.

Courty rejects the use of acid nitrate of mercury, because he has seen pytalism to follow its application. He prefers nitric acid, chromic, and other strong acids. He treats at length of the actual cautery, and favours its application to the diseased cervix during pregnancy. We think that during this condition it is better to let the uterus alone.

The interesting subject of intra-uterine injections is discussed. Our author says :—

“Nothing could be simpler or more efficacious than the injection of the cavity of the uterus, if the irritability of the endometrium, the narrowness of the internal os, and the permeability of the Fallopian tubes, were not often unexpected sources of danger, which cannot always be obviated by even the most prudent and competent gynecologist. For my part, I have often made these injections with impunity; but, notwithstanding that I have not lost a patient by this practice, I have seen instantly follow the most formidable results, so that I quite decided never to inject again caustic liquids into the uterine cavity, and not to inject even pure water, except when the internal os is largely dilated.”

We have read with much interest the memoir of Mélier¹ to which Courty refers when speaking of intra-uterine injections. With the aid of the speculum, Mélier injected carefully the uterine cavity with a hydrocele syringe, to which was attached a long gum-elastic canula, that he introduced into the canal of the cervix. He speaks of pain, like expulsive pains, having been caused by the accumulation of liquid in the cavity of the uterus; and mentions a case in which the os was so small that it scarcely admitted the smallest-sized bougie. He tried to dilate the os with gentian-root, but the dilatation was painful, and he replaced the gentian-root by a small silver canula. Mélier remarks, “I would replace it, if necessary, by a double current sound, so as to wash out more readily the interior of the cervix, and even the cavity of the uterus, which may be more or less diseased.” These remarks have especial reference to the treatment of cervical catarrh, which he describes in this memoir very accurately, and very properly attributes to this pathological condition a cause of sterility.

We believe, with Courty, that intra-uterine injections are dangerous, and that a previous dilatation of the uterine canal, which permits an unobstructed escape of the injected liquid, is indispensable to safety, and is one of the first, but not the only condition of safety. The extreme gentleness with which the injection should be made, is also a condition of safety. Our experience in this matter, though far from ample, is, however, sufficient to induce us not to abandon entirely a method of treatment which we believe is unattended with great danger, if proper precautions are taken. We must confess, nevertheless, that we should regard with considerable apprehension a desire to adopt too readily this mode of treating diseases of the uterus.

During the puerperal condition, when the septic action of retained decomposed matters in the uterus has caused us to fear septicæmia, we have, by the aid of a Davidson's syringe, washed out the cavity of the uterus with tepid water containing glycerine and carbolic acid, and with the effect, we think, of having several times saved life by this means. We have just read a valuable memoir by Dupiërris,² on the efficacy of intra-uterine injections of tincture of iodine in post-partum hemorrhages. His cases are conclusive. In some of them he introduced his hand into the uterus and removed the clots, and used other means, without avail; but the hemorrhage was immediately stopped by the injection of tincture of iodine, in the proportion of half an ounce of the tincture to one ounce of water and ten grains of iodide of potassium. Subsequent metropéritonitis is not to be feared by

¹ *Considérations Pratiques sur le Traitement des Maladies de l'Utérus. Mémoires de l'Acad. de Méd., vol. ii. p. 366. Paris, 1833.*

² *De l'Efficacité des Injections Iodées dans la Cavité de l'Utérus pour Arrêter les Métorrhagies qui Succèdent à la Délivrance, etc. Paris, 1870.*

the use of iodine in this manner. We regret that we have not space to discuss fully the subject of intra-uterine injections.

For cauterization of the uterine cavity Courty uses only nitrate of silver. In this practice we believe he is quite right, and that the strong acids should not be used; but we think that the practice which he advocates, of leaving a stick of nitrate of silver in the cavity of the womb, is dangerous and reprehensible. We frequently, in cases of endometritis, in which there is no peri-uterine inflammation or other distressing complication, cautiously resort, with much benefit, to one or two cauterizations of the endometrium with nitrate of silver, which has been made to adhere to a probe dipped into this caustic in a fused state. In a number of cases we have noticed great pain and nausea to follow this kind of cauterization; and sometimes the pain has been so intense as to require a hypodermic injection of sulphate of morphia.

Courty attributes a proper degree of influence to the action of constitutional causes or to diatheses, which keep up diseases of the uterus. Frequently the uterine disease is at first developed independently of the diathesis, but is kept up by it, and becomes finally, to all appearances, a manifestation of it. An appropriate treatment of the diathesis is necessary to effect a cure of the uterine disorder. Thus, in cases of herpetic eruptions on the cervix uteri, we have seen the intensity of the eruption on the cervix alternate with that on the skin, sometimes greater, sometimes less; and we have advantageously suspended all local treatment, and gained much benefit from a resort to constitutional remedies.

Courty, in his observations on obstructive dysmenorrhœa, merely alludes to a torsion or twisting of that portion of the cervix known as the isthmus, and illustrates this pathological condition by a wood-cut from Guyon's publication. (Op. cit.) We have within a year had two or three cases of this character under treatment by gradual dilatation with metallic sounds, and have seen a marked improvement to follow their use. Though in these cases the torsion of the isthmus was observed in women who had never borne children, and it was the principal obstacle to fecundation, as well as a cause of obstruction to the free escape of the menstrual fluid. The sounds which we prefer for dilating the uterine canal are those of Dr. Joseph Kammerer, of New York, and are only four in number. To facilitate the introduction of the first one, we use a certain degree of forcible dilatation with Atlee's dilator. This mode of forcible dilatation is not attended with the danger of laceration that is apprehended by Courty, if made with care, and in properly selected cases.

In cases of metrorrhagia he observes that as to the persulphate of iron he has not often used it, and does not think that it merits much confidence. We have often found the muriated tincture of iron in such cases, in doses of eight or ten drops sufficiently diluted, to cut short the hemorrhage within a few hours. Sometimes in cases of minute fungous growths within the cervical canal, or in the uterine cavity, the slightest touch of the sound or a too timid use of the curette will cause an increase of the bleeding. This latter circumstance may possibly make the physician abandon the use of this instrument at the very moment that, if cautiously used, but with a little more vigour, the source of the bleeding would be removed, and the bleeding would stop. The curette of Récamier, recommended by Courty, is too blunt, and might, if used with too much force, do harm, and, besides, would not scrape off the fungous growths, which are the cause of the metrorrhagia. M. Courty, in referring to the use of styptics, and the plugging of the vagina in such cases, has omitted to mention their direct application to

the surface of the uterine cavity as an effectual way to arrest hemorrhage. A bit of cotton twisted on the end of a probe and saturated with persulphate of iron, if carried into the uterine cavity and held in it for a while, will be very sure to stop the bleeding. If not, a bit of patent lint made into a cone, neatly adjusted to a sponge-tent applicator, and moistened with a strong solution of persulphate of iron, may be passed into the uterus, and the upper part of the vagina plugged. M. Courty recommends merely to place a piece of cotton wet with persulphate of iron against the cervix before plugging the vagina; this, in some cases of metrorrhagia, is not sufficient, and certainly would not do to stop the bleeding which occurs after incision of the os for atresia of this orifice. His advice to compress the abdominal aorta in uncontrollable uterine hemorrhage, is an expedient not always worthy of trial, especially if the hemorrhage should come from the uterine sinuses. There would be a reflux of blood in the vena cava and its branches unless this vein were also compressed.

Eminent pathologists assert that, outside of the puerperal condition, inflammation of the parenchymatous tissue of the body of the uterus is of most unfrequent occurrence. If the term metritis is restricted to inflammation of this tissue, then metritis is a very rare disease. The confusion which prevails with regard to the exact limitation of metritis is well expressed by Courty in the following citation:—

“The different morbid states which are designated by the common term metritis are so great that it is necessary to divide it into varieties which correspond exactly to these different states. Besides, it is known to offer so great a number that it is impossible to give a general description of metritis. Congestion of the uterus, hypertrophy, erosions, uterine catarrh, are all or nearly all embraced by the term metritis, and we are obliged, in order to distinguish these diseased conditions which are so different, to call one endometritis or internal metritis, another para-metritis, another peri-metritis or metro-peritonitis, another parenchymatous metritis, another cervical metritis, another corporeal metritis, and in addition we recognize an acute and a chronic metritis, a non-*puerperal* and a *puerperal* metritis, and even a post-*puerperal* metritis. It is not surprising that the question should be asked, what is metritis? There does not exist a type of metritis such as will admit of a simple description. The uterus is subject to such changes by reason of its structure, the nature of its functions, especially during pregnancy, that inflammation of this organ, occurring under conditions which are so different in different women, may well offer in its manifestations differences which are greater than those that take place in other organs.”

In the chapter on inversion of the uterus, M. Courty alludes to a plug for making counter-pressure, which was invented by Viardel, and represented by a drawing in this obstetrician's work published in 1674. It seems that Depaul proposed one similar to that of Viardel, terminated at one end like the distal extremity of a drumstick, and suitably padded. Depaul recommended to apply his instrument against the prolapsed part, and push carefully in the direction of the axis of the uterus. Depaul was unfortunate, he ruptured the uterus with his instrument. An ingenious and exceedingly original application of a similar instrument was made by Professor T. Gaillard Thomas, of New York, with this essential difference, however, that the plug for making counter-pressure was pressed with one hand against the abdominal wall and into the constricting ring, while pressure was made with the other hand to reduce the inversion. M. Courty describes a method of his own for the reduction of inversion, which is especially worthy of consideration and trial. He reduced an inversion of ten months' duration by this method: He passed into the rectum two fingers of one hand, and having depressed with them the anterior wall of the

rectum, hooked one finger on each side of the cervix into the corresponding fold of the utero-sacral ligament, and steadied the cervix in this manner with one hand, while he made counter-pressure with the other on the inverted portion.

There are, we think, some points of capital importance in connection with inversion of the uterus, and which do not appear to have engaged M. Courty's attention. We allude to the mechanism of inversion in its relations to restitution of the uterus to its natural position. The advice is often given to return that part which is first inverted. The question is, which is that part? Is it the fundus, or is it one horn of the uterus after the other, as affirmed by Kiwisch, or is it, as is probable in most cases, that portion which is immediately contiguous to the cervical ring which, after inversion has taken place, constricts the extruded part? Prolapsus of the rectum is analogous in some respects to acute or recent inversion of the uterus. The cervix uteri bears somewhat the same relations to the flaccid uterine walls that the ring formed by the sphincter ani bears to the relaxed walls of the rectum when this intestine is prolapsed and strangulated by the sphincter muscle. The walls of the uterus are probably first rolled from within outward in the same manner that the prolapsed walls of the gut are. There is one point, however, of the most practical importance, which is peculiar to inversion of the uterus, and that is inversion of the horns of the uterus. It is these parts which it is necessary to restore first, and herein consists the success of Noeggerath's method, and which has proved so successful in Professor Thomas's hands, who in one case, for the better dilatation of the cervical ring, successfully resorted to abdominal section and forcible dilatation with a steel dilator somewhat like a glove-stretcher.

It would be well, probably, to pull the uterus down outside of the vulva, to indent the cornua uteri deeply, and then suddenly push the uterus high up into the pelvis. This is essentially the plan adopted by Dr. Thomas.¹

We do not wish to unnecessarily criticize M. Courty's work, but in the diagnosis of uterine fibroids we think that he has not sufficiently insisted on the usefulness of an exploration with the sound. His remarks on the diagnosis of this sort of tumours are otherwise very complete. There is a very simple expedient of great value which we have seen Dr. Marion Sims use for this purpose. A No. 6 elastic bougie, containing a wire of suitable stiffness, is slightly curved at its distal end, and introduced within the os uteri; the handle of the wire is held firmly with one hand, and the bougie pushed along with the other. As Dr. Sims says, the wire stiffens the bougie outside of the uterus, but allows the bougie to pass onward to the uterine cavity to measure accurately its depth.

M. Courty's remarks on the differential diagnosis of peri-uterine metritis are summed up in a kind of tabular form. Frequently these tabular forms of diagnosis contain such trivial distinctions or unnecessary reminders that the capital points of difference are lost sight of. The chapter on peri-uterine hæmatocele is one of the most valuable in his treatise, and that on ovarian cysts is as complete as could be desired.

In this review it is quite impossible to mention even briefly much that is interesting and instructive in M. Courty's work. We heartily recommend his work as the most valuable one in the French language on diseases of the uterus.

W. R. W.

¹ See Amer. Journal of Obstet. and Diseases of Women and Children, Vol. II., No. 3, Nov. 1869.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXII.—*Circular No. 3, War Department, Surgeon-General's Office, Washington. A Report of Surgical Cases in the Army of the United States from 1865 to 1871. Quarto, pp. 296. Washington: Government Printing Office, 1871.*

WE have read with interest the record of surgical cases included in this circular, which appears to have fully accomplished the aim of its publication, which has been, Dr. Otis tells us, to present the surgical cases, more particularly those pertaining to operative surgery, observed in the army during the past five years. We shall proceed to lay before our readers an abstract of its contents, and to notice a few points which have particularly attracted our attention.

Two hundred and ninety-seven cases of gunshot wounds are first related with more or less fulness of detail. Case IX. is one of decided interest, in which a conoidal musket-ball entered near the posterior border of the left parietal bone and came out through the frontal. The man lived two hours, and at the autopsy, in addition to destruction of the left cerebral hemisphere, the eight cranial bones were all found to be fractured. Altogether thirty-eight cases of gunshot fractures of the skull and twenty gunshot wounds of the face, of which thirteen are fractures, are presented.

In sixteen cases of gunshot wounds of the neck, the carotid was four times divided, the subclavian once. The pharynx was wounded twice, one of the cases being complicated with fracture of the hyoid bone, and one case of wound of the œsophagus recovered. Eleven cases of recovery from wounds of one lung are recorded, while fifteen ended fatally. Five cases in which both lungs were wounded are reported to have ended in death, and Dr. Otis says he knows of no authenticated recovery from such a lesion. Eight wounds of the heart from musket-balls and five from pistol-bullets are included in the list; in one of the latter, in which the right auricle was the part involved, the patient survived fifty hours. Eight cases of chest wounds complicated with injury of the spine, nine cases where both the thoracic and abdominal cavities were opened, one case of wound of the stomach, and twenty cases of wounds of the small intestine, being all of each kind recorded, proved fatal. In view of the fatality attendant upon penetrating wounds of the abdomen, Dr. Otis is disposed to desert the "ostrich plan," as he terms it, of giving opium, and to advocate a resort to abdominal section and such subsequent steps as the nature of the wounds requires. Four recoveries followed wounds of the liver, while eleven terminated in death. There were four fatal complicated wounds of the spleen, while of eight grave cases of penetrating wounds of the pelvis, seven proved mortal, one of them being a wound of the bladder. There is also recorded one other fatal case of gunshot wound of that viscus.

Proceeding to the upper extremity, we find there were four gunshot fractures of the scapula, one of the scapula and clavicle, one of the clavicle alone, four of the humerus, and one case in which the shoulder-joint was involved. Four

cases of wounds of the elbow, in two of which the joint was opened, twelve of the forearm, and twenty of the hand, are specially reported in addition to those cases which are spoken of as flesh-wounds of the upper extremity. Of nine cases of gunshot fracture of the femur, three in the upper third were fatal; of three in the middle third, one recovered, and three in the lower third terminated favourably. There are four cases reported of recovery after gunshot wounds of the knee-joint without operation, but Dr. Otis regards the evidence presented by the reporters as insufficient to convince the sceptical. An analysis of three hundred and eighty-seven cases of gunshot wounds completes this portion of the work. We do not think anything has impressed us more than the number of cases in which the wounds have been inflicted by the guard in the discharge of police duty, bringing us face to face with such cases which as a civilian we only see as the result of brawls and violence, but which in these instances have been the result of the prompt administration of strict justice.

The next division includes Incised and Punctured Wounds and Contusions, of which we are told the number of cases is very large in proportion to the mean strength of the army, and the fact is accounted for, in a measure, by the lawlessness of the population on the frontiers, and in part by the lax discipline observed after the close of the rebellion.

Case CCCXV. is so remarkable that we are tempted to present a brief abstract of it. Four or five feet of the ilium, the cæcum and appendix vermiformis, and a part of the ascending colon, protruded through a wound of the peritoneum two and a half inches long, the last being part of a horizontal incision fourteen inches in length, which for the rest of its extent only divided the skin and muscular walls. There was an incised wound of the ilium an inch long, which was closed by a single silk suture, and the mass of bowel and accompanying mesentery replaced in the abdomen. Despite an attack of delirium tremens, and an additional gash on the walls of the chest six inches long, the patient recovered, the reporter, Dr. Doughty, attributing this so favourable result in large measure to the free use of ice poultices.

In Case CCCXVII., reported by Dr. Cleary, the stomach and eighteen inches of the transverse colon protruded, and the patient recovered; while in the next case, which Dr. F. Barnes describes, the stomach, a portion of the colon, and nearly all the small intestine were extruded through an incised wound; the bowels were wiped and put back, and the patient got well almost without symptoms. In neither of the last two cases were any of the viscera injured. There are also included in this section five instances of bayonet wounds, which experience has proved to occur so rarely in later years.

The third division is devoted to simple and compound Fractures and Luxations. In it are narrated many cases of individual interest, while a series of thirty-three cases of fractures of the skull presents many points of value, but which we are obliged to pass over unnoticed.

A few years since we were much interested in a paper by Dr. Bill upon arrow wounds, published in the forty-fourth volume of this Journal, and we have attentively read the cases of this class recorded in the work before us. The editor says that in the specimens in the Army Medical Museum where the cranial cavity has been penetrated by arrows, the external and internal tables are cut with equal cleanness, being in marked contrast with other punctured fractures, and in opposition to the views held by Dr. Bill in the article above referred to. Besides several cuts of specimens of puncture of the cranium by arrows, their penetrative power upon the hard, dense bones of the bison is illustrated by three drawings; which we cease to wonder at when we consider that most or all such wounds are inflicted at very short range, and are told that the

initial velocity of an Indian arrow has been computed as nearly equal to that of a musket-ball. That arrow wounds are sufficiently dangerous is proved by the fact that of eighty-three cases here recorded, twenty-six, including nearly all in which the three great cavities or the larger bones or joints were involved, terminated fatally, while at the same time many fatal cases are known not to have been returned. Dr. Otis treats at some length upon the best method of removing arrow-heads, and a great deal of interesting information is contained in the text and notes.

We confess to being surprised to find no more than five cases of serpent-bites recorded. Of these, three were bites of rattlesnakes and two of water-moccasins. In one of the cases where the injury was inflicted by a rattlesnake, the sufferer ultimately succumbed to general cellulitis. There is some confusion about the dates in this case: the wound was received on July 13th, 1869; we are told that his condition from the 16th to the 30th gradually improved, yet the patient is said to have died July 16th, 1869; we presume that the reporter must have intended to write July 31st. All the other cases resulted in recovery. In one of the moccasin-bites three quarts of whiskey were administered in two hours, and the man was not intoxicated and got well! Dr. Mitchell's researches upon the poison of serpents are referred to in terms of deserved commendation, and Dr. Otis tells us that in a forthcoming work of Dr. Fayrer, of Calcutta, the number of fatal snake-bites in British India is computed at twenty thousand annually, while on this continent they are of rare occurrence.

A short section of Burns, Scalds, and Frost-bites is followed by one containing the Amputations of five years. One hundred and fourteen amputations of the fingers and two of the wrist were all successful. Twenty patients suffered amputation of the forearm, and in two of the number both forearms were removed, one of the single cases dying from continued shock, and one of the double operations from tetanus. Of twenty-four amputations of the arm, five died—in three instances the opposite forearm was taken off at the same time with the arm, and one of these double amputations was complicated with other injuries and was among the number attended by a fatal result. Of four cases of amputation through the shoulder-joint, one died and three recovered. Twenty-two amputations of the toes and six of the foot, one of the latter being double, resulted successfully. Two single and two double amputations were done through the ankle-joint, one of the latter ending fatally. Twenty-three cases are reported under amputations of the leg, five of the number being instances of multiple operations—of the whole number, death ensued in five cases. Three successful amputations at the knee-joint were performed, the operation adopted having been in all cases that recommended by Mr. Carden, which includes removal of the condyles of the femur. There are reports of twenty-six amputations of the thigh, which we should much like to analyze, but lack of space prohibits the attempt, and we will only say that the results appear to have been good, as ten cases recovered. Two cases of amputation at the hip are also included in this report, one being the case recorded by Dr. Du Bois in Circular No. 7, which terminated fatally in thirty hours, the other being Dr. Otis's own case of reamputation, well known to the readers of this Journal, having been fully reported in its issue for January, 1871, and a lithograph of the patient forms one of the illustrations in this Circular. One patient successfully underwent removal of both legs and both forearms for frost-bite.

Dr. Otis contends that trephining and removal of portions of the facial bones must in future be classed with Excisions, which constitute the next division. We are glad to see two cases in which trephining was successfully performed,

as we think this operation is passing through a period of unpopularity dependent in some measure upon reaction following the somewhat extreme practice of our forefathers. One very interesting case of excision of the upper third of the radius, in which the result was satisfactory, is narrated. Portions of the shaft of the humerus were excised seven times, and twice the head of the bone was subjected to the same treatment, with a favourable issue in all the cases. The hip-joint was excised three times by army surgeons, in two of them the patients recovered with useful limbs; and one case occurring in the practice of Dr. Taylor, of the navy, was attended with equal success. The after appearance of the army patients is represented by lithographs. The recovery of three out of four cases is such a measure of success as the most sanguine advocate of the operation would not claim for the average, but the editor thinks they furnish sufficient evidence to place it among the legitimate expedients of surgery.

Among the ligations of arteries, twenty-seven in number, one of the primitive carotid was successful. One of three ligations of the external iliac, and three out of four ligations of the femoral, were followed by recovery. The abdominal aorta was once tied for ruptured iliac aneurism. Dr. Otis emphatically and very properly condemns the practice, said still to be pursued by some surgeons, of tying only the proximal end of a divided artery. Among the various operations at the end of the volume, we find one instance of the removal of a salivary calculus as large as a white bean. A series of cases of phimosis is recorded, the operation resorted to, in the great majority of instances, being that of circumcision. Nine successful cases of lithotomy are included in this last division, in five of which the calculus had formed around foreign bodies, an iron arrow-head forming the nucleus in one of the number, the case having occurred in the person of an Indian chief. The ordinary lateral operation was adopted five times, the bilateral and Fergusson's modification of it, each once, while in two instances the method resorted to is not mentioned. We have a report of one case of scirrhus of the mamma, in which cundurango was used without effect—but the hope entertained by some that this much-vaunted vegetable alterative would prove an antidote for cancer is already a thing of the past. Six cases of "alleged" tetanus are reported, of which four recovered under three different kinds of treatment. We observe that chloroform and ether were used with about equal frequency, and the mixture of both, which we have always considered to be particularly dangerous from the fancied security attending its use, seems to be regarded with favour by some army surgeons. One death from chloroform is recorded. Two papers by the late Dr. McGill, in which he advises making flaps of periosteum to cover the ends of the bones in amputations, terminate the original matter of the book.

We have passed over many interesting points unnoticed, and have by no means referred to all of value which the volume contains, as our limits, both of time and space, prohibit such an analysis as we would like to give.

Dr. Otis has done his work well, having appended valuable and complete indices of the names of reporters and patients, with a table of contents, and he has so arranged his materials and furnished summaries that our own labour has in large part been merely that of transcribing. Quite a number of clerical errors have, however, crept in; for instance, on page 38 a wound of the buttock is classed with wounds of the thoracic parietes; again, in Case CLXXXI. we are told of a patient who received a wound in April, 1868, and, recovering from its effects, was returned to duty in March of the same year. On page 42, in the division of gunshot wounds, Dr. Otis tells us that we must go back to the case of St. Martin to find any recoveries from *traumatic* wounds of the stomach in the army records, and yet Cases CCCXIV. and CCCXXXV. are instances

of recoveries from incised and punctured wounds of that viscus. In report DLXXXII., Case 1, we are told of an army revolver "carrying a conical ball of a calibre four inches," which must indeed be a formidable weapon; and in the same case Carden's amputation at the knee-joint is said to be recommended by "Martoe, of New York." There seems also to be some mistake about the case in which cundurango was exhibited; Drs. B. Norris and Woodward speak of it as scirrhus, whereas we are afterwards told by the editor that it was undoubtedly medullary in its nature.

The style and appearance of this Circular is similar to that of those which have preceded it from the Surgeon-General's Office, and which have reflected so much credit upon that office. To have the work done by them recorded in so handsome and permanent a form, we should think would be well calculated to stimulate among army surgeons that love for the profession which is so apt to grow cold in the isolation of frontier posts. S. A.

ART. XXIII.—*On the Physiological Effects of Severe and Protracted Muscular Exercise, with Special Reference to its Influence upon the Excretion of Nitrogen.* By AUSTIN FLINT, Jr., M.D., Professor of Physiology in the Bellevue Hospital Medical College, New York, etc. etc. (Reprinted from the New York Medical Journal, June, 1871.) 8vo. pp. 91. New York: D. Appleton & Co., 1871.

IN the month of May, 1870, Mr. Edward Payson Weston, the celebrated pedestrian, accomplished the remarkable feat of walking one hundred miles in twenty-one hours and thirty-nine minutes. The entire quantity of urine passed by him during this time was carefully examined by Prof. Austin Flint, Jr., with the view of determining the influence of excessive and prolonged muscular exercise upon the elimination of effete matters by the kidneys. The results of this examination were published in the *New York Medical Journal* for October, 1870.

In the succeeding summer, Mr. Weston undertook to walk four hundred miles in five consecutive days, and upon one of these days to walk one hundred and twelve miles in twenty-four consecutive hours. Although he did not accomplish this task, he succeeded in walking three hundred and seventeen and a half miles in the time designated. An offer to submit himself, during this time, to scientific observation was at once accepted by Prof. Flint, who, on account of the great importance of the proposed investigation, availed himself of the scientific experience and judgment of Professors Doremus, Dalton, Van Buren, Flint, Sr., Hammond, and Mott.

Some weeks before the walking commenced, these gentlemen held a meeting, at which a systematic plan of investigation was agreed upon. It was resolved to divide the observations into three periods, viz., a first period, five days before the walk; the second, the five days of the walk; and the third, five days after the walk. Every day the weight (taken naked), the pulse, respirations, and temperature were taken, as nearly as possible at the same hour and under the same conditions. The weight of every separate article of food and drink was carefully noted. The amount of exercise taken in the periods before and after the walk was also observed. The entire urine of the twenty-four hours was collected day by day, and subjected to chemical and microscopical examination.

At the time of walking Mr. Weston was thirty-one years and eight months old, five feet and seven inches high, and weighed when naked from one hundred and twenty to one hundred and twenty-five pounds. He was under observation altogether fifteen days. During the first period of five days he took moderate exercise; in the second period of five days he performed his self-appointed task of walking; and during the third five days he remained at almost absolute rest. Throughout the entire fifteen days he abstained altogether from alcoholic beverages. During the first ten he did not smoke, but during the third period of five days he smoked from five to seven cigars daily.

Professor Flint has given us a series of tables for each day's observations, enumerating the various articles eaten and the quantity of each. Also the amount of nitrogen contained in each, as determined by reference to the estimates of Payen, of France, and of Mr. Oscar Loew, the chemical assistant of Professor Doremus. The quantity and specific gravity of the urine, the amount of urea, of nitrogen in the urea, of uric, phosphoric, and sulphuric acids, and of chloride of sodium, for each twenty-four hours, are also given. The feces were also carefully weighed, and the amount of nitrogen therein contained determined by actual analysis. The naked weight, temperature, frequency of pulse, and respiration, were ascertained every day.

In the subjoined tables the reader will find the results thus obtained, presented in a consolidated form, and from which the final deductions of our author have been made. In these tables the cutaneous and pulmonary exhalations are estimated by subtracting the weight of urine and feces from the weight of ingesta; to this result adding any loss of weight or subtracting from it any gain in the weight of the body during the twenty-four hours. The weights are given in pounds and ounces avoirdupois, and in grains troy. The equivalents in French weights are given in parentheses.

TABLE A'.—*Weight, Temperature, Pulse, etc.*

First period—Five days before the walk.

	1st day. Nov. 16th.	2d day. Nov. 17th.	3d day. Nov. 18th.	4th day. Nov. 19th.	5th day. Nov. 20th.
Weight of body (naked).....	120.5 lbs. (54 k. 655 gr.)	121.25 lbs. (55 kilogr.)	120 lbs. (54 k. 432 gr.)	118.5 lbs. (53 k. 745 gr.)	119.2 lbs. (54 k. 62 gr.)
Temperature under tongue.....	99.7° Fahr. (37.6° C.)	98.4° Fahr. (36.9° C.)	98° Fahr. (36.7° C.)	99.1° Fahr. (37.3° C.)	99.5° Fahr. (37.5° C.)
Pulse (sitting and tranquil)....	75	73	71	78	93
Respirations ".....	20	20	20	23	25
Weights of ingesta.....	122.99 oz. (3,492.17 gr.)	105.43 oz. (2,987.92 gr.)	86.56 oz. (2,453.67 gr.)	86.19 oz. (2,443.19 gr.)	101.34 oz. (2,872.63 gr.)
Weights of urine and feces.....	44.20 oz. (1,303.08 gr.)	43.73 oz. (1,287.95 gr.)	51.98 oz. (1,531.53 gr.)	36.51 oz. (1,076.50 gr.)	38.83 oz. (1,188.96 gr.)
Estimated cutaneous and pul- monary exhalation.....	78.79 oz. (2,189.09 gr.)	49.70 oz. (1,354.97 gr.)	54.58 oz. (1,497.14 gr.)	73.55 oz. (2,046.69 gr.)	51.51 oz. (1,366.67 gr.)
Number of hours of sleep.....	7 h. 30 m.	6 h. 40 m.	9 h.	7 h. 15 m.	10 h.
Number of miles walked.....	15	5	5	15	1

TABLE A².—*Weight, Temperature, Pulse, etc.*

Second period—Five days of the walk.

	1st day. Nov. 21st.	2d day. Nov. 22d.	3d day. Nov. 23d.	4th day. Nov. 24th.	5th day. Nov. 25th.
Weight of the body.....	116.5 lbs. (52 k. 838 gr.)	116.25 lbs. (52 k. 724 gr.)	Estimated. 115 lbs. (52 k. 157 gr.)	114 lbs. (51 k. 704 gr.)	115.75 lbs. (52 k. 497 gr.)
Temperature under tongue....	95.3° Fahr. (35.3° C.)	94.8° Fahr. (34.9° C.)	96.6° Fahr. (35.9° C.)	96.6° Fahr. (35.9° C.)	97.9° Fahr. (36.6° C.)
Pulse (sitting and tranquil)....	98	93	109	68	80
Respirations	20	23	22	18	20
Weights of ingesta	186.25 oz. (5,282.38 gr.)	165.81 oz. (4,700.13 gr.)	171.14 oz. (4,851.22 gr.)	149.07 oz. (4,225.61 gr.)	185.07 oz. (5,246.09 gr.)
Weights of urine and feces....	48.09 oz. (1,416.61 gr.)	42.54 oz. (1,245.73 gr.)	41.88 oz. (1,239.00 gr.)	38.51 oz. (1,136.06 gr.)	49.45 oz. (1,457.15 gr.)
Estimated cutaneous and pul- monary exhalation	181.36 oz. (5,089.78 gr.)	127.27 oz. (3,568.40 gr.)	149.26 oz. (4,179.22 gr.)	126.56 oz. (3,542.55 gr.)	107.62 oz. (2,995.94 gr.)
Number of hours of sleep.....	1 h.	4h. 28m. dozed 5h.	30m.	1h.	9h. 26m.
Number of miles walked.....	80	45	92	57	40.5
Walking time.....	16h. 8m. 3s.	10h. 23m. 33s.	20h. 8m. 43s.	12h. 30m. 34s.	8h. 56m. 36s.
Rate per hour.....	ab't 5 miles	4.62 miles	ab't 4.5 m'ls	4.5 miles	ab't 4.5 m'ls
Urination.....	6m. 45s.	2m. 27s.	7m. 47s.	5m. 26s.	4m. 24s.
Defecation.....	5m. 12s.	6m.	none	3m.	off the track
Rest on the track.....	1m.	39m.	1h. 32m. 30s.	41m.	51m.
Rest off the track.....	7h. 23m.	12h. 49m.	2h. 11m.	14h. 8m.	14h. 8m.

TABLE B².—*Weights and Analyses of Food and Drink.*

Second period—Five days of the walk.

	1ST DAY. Nov. 21st.		2D DAY. Nov. 22d.		3D DAY. Nov. 23d.		4TH DAY. Nov. 24th.		5TH DAY. Nov. 25th.	
	Quan- tity in oz.	Nitro- gen in gr.	Quan- tity in oz.	Nitro- gen in gr.	Quan- tity in oz.	Nitro- gen in gr.	Quan- tity in oz.	Nitro- gen in gr.	Quan- tity in oz.	Nitro- gen in gr.
Meats.....N. 3.50 p. c.	2.00	30.62	6.25	95.70	..	..	1.62	24.81	14.00	214.38
Eggs.....N. 1.90 "	6.90	57.35	8.28	68.82	8.28	68.82	..	..	4.14	34.41
Milk.....N. 0.66 "	5.66	16.34	5.66	16.34	6.18	17.84	8.75	25.27	9.78	28.24
Bread.....N. 1.08 "	1.25	5.91	10.50	49.61	1.50	7.09	6.62	31.25	9.00	42.52
Beef- essence..N. 0.87 "	..	..	..	..	22.26	84.73	10.33	39.32	9.54	36.31
Oatmeal- gruel...N. 0.086 "	..	..	..	..	6.78	2.55	7.92	2.92	3.39	1.28
Potatoes..N. 0.33 "	..	..	2.00	2.89	..	..	..	..	4.00	5.77
Butter....N. 0.64 "	2.63	7.36	0.50	1.40	0.50	1.40	..	..	1.25	3.50
Coffee ....N. 0.11 "	67.67	32.57	57.82	27.83	95.95	46.18	38.38	18.47	27.27	13.12
Tea.....N. 0.02 "	16.03	1.40	38.08	3.33	..	..	30.06	2.63	40.08	3.51
Non-nitrogenized mat- ters.....	84.11	..	36.72	..	29.69	..	45.39	..	62.62	..
Total.....	186.25	151.55	165.81	265.92	171.14	223.61	149.07	144.70	185.07	383.04
Total in grammes.....	5,282.38	9,820	4,700.13	17,229	4,851.22	14,812	4,225.61	9,376	5,246.09	24,818

Average of five days, quantity of food and drink 171.47 oz.

" " " " " " 4,860.57 grammes.

" " " " " " 234.76 grains.

" " " " " " 13.211 grammes.

TABLE C².—*Analyses of Excretions.—Urine and Feces.*

Second period—Five days of the walk.

(French weights in parentheses.)

URINE.	1st day. Nov. 21st.	2d day. Nov. 22d.	3d day. Nov. 23d.	4th day. Nov. 24th.	5th day. Nov. 25th.	Averages.
Quantity.....	42.09 fl.oz. (1,254.0 c.c.)	33.50 fl.oz. (991.0 c.c.)	40.56 fl.oz. (1,200.0 c.c.)	32.52 fl.oz. (965.0 c.c.)	43.60 fl.oz. (1,290.0 c.c.)	38.46 fl.oz. (1,138.0 c.c.)
Specific gravity....	1028.6	1030.0	1032.5	1029.6	1022.6	1028.7
Urea	710.00 gr. (46.065)	702.86 gr. (45.540)	851.95 gr. (55.200)	688.98 gr. (44.641)	657.02 gr. (42.570)	723.16 gr. (46.803)
Nitrogen in urea...	331.33 " (21.497)	328.00 " (21.252)	397.58 " (25.760)	321.52 " (20.832)	306.61 " (19.866)	337.01 " (21.841)
Uric acid.....	0.32 " (0.021)	0.14 " (0.009)	4.74 " (0.307)	9.21 " (0.597)	0.57 " (0.037)	3.00 " (0.194)
Phosphoric acid...	84.95 " (5.504)	72.14 " (4.674)	102.25 " (6.625)	66.30 " (4.296)	57.49 " (3.725)	76.63 " (4.965)
Sulphuric acid.....	73.39 " (4.755)	56.90 " (3.687)	63.71 " (4.128)	32.66 " (2.116)	40.84 " (2.646)	53.50 " (3.666)
Chloride of sodium	96.00 " (6.220)	91.68 " (5.940)	44.45 " (2.880)	28.78 " (1.865)	64.50 " (4.179)	65.08 " (4.217)
Abnormal matters.	Large am't of oxalate of lime (oc- tahedra).	Same as Nov. 21st.	Very large amount of oxalate.	Small am't of oxalate.	Small am't of oxalate, with amor- phous phos.	
FECES.						
Quantity	4.80 oz. (136.0)	7.94 oz. (225.0)	None	5.03 oz. (142.5)	4.87 oz. (138.0)	4.53 oz. (128.3)
Nitrogen in feces ..	25.77 gr. (1.670)	42.64 gr. (2.763)	"	27.01 gr. (1.750)	26.16 gr. (1.695)	24.32 gr. (1.576)
Nitrogen in urea & feces combined...	357.10 gr. (22.167)	370.64 gr. (24.015)	397.58 gr. (25.760)	348.53 gr. (22.582)	332.77 gr. (21.561)	361.52 gr. (23.217)
Nitrogen of urea & feces per 100 parts N. food.....	235.63	139.39	173.91	240.86	84.27	174.81
Uric acid per 100 parts of urea.....	0.045	0.020	0.556	1.336	0.087	0.409

The feces contained an average of 72 per cent. of water.

TABLE A³.—*Weight, Temperature, Pulse, etc.*

Third period—Five days after the walk.

	1st day. Nov. 26th.	2d day. Nov. 27th.	3d day. Nov. 28th.	4th day. Nov. 29th.	5th day. Nov. 30th.
Weight of the body.....	118 lbs. (53k. 518 gr.)	120.25 lbs. (54k. 539 gr.)	120.25 lbs. (54k. 539 gr.)	123.5 lbs. (56k. 13 gr.)	(120.75 lbs. (54k. 765 gr.)
Temperature under tongue.....	98.6° Fahr. (37° C.)	98.4° Fahr. 36.9° C.	99.3° Fahr. (37.4° C.)	98.8° Fahr. (37.1° C.)	97.5° Fahr. (36.4° C.)
Pulse (sitting and tranquil)	76	73	70	78	76
Respirations "	22	22	22	24	24
Weights of ingesta.....	129.95 oz. (3,683.63 gr.)	180.61 oz. (5,119.66 gr.)	121.69 oz. (3,449.49 gr.)	188.01 oz. (5,329.43 gr.)	102.67 oz. (2,910.54 gr.)
Weights of urine and feces.....	35.91 oz. (1,061.19 gr.)	51.84 oz. (1,527.81 gr.)	95.37 oz. (2,809.25 gr.)	68.36 oz. (2,013.68 gr.)	77.34 oz. (2,278.72 gr.)
Estimated cutaneous and pul- monary exhalation	58.04 oz. (1,601.44 gr.)	92.77 oz. (2,570.85 gr.)	26.32 oz. (640.24 gr.)	67.65 oz. (1,841.75 gr.)	69.33 oz. (1,879.62 gr.)
Number of hours of sleep.....	8h. 20m.	8h. 15m.	8h. 50m.	7h. 35m.	7h. 45m.
Number of miles walked.....	2	2	2	2	3

TABLE D.—*Daily Averages for the Three Periods.*

(French weights and measures in parentheses.)

	First period— Five days before the walk.	Second period— Five days of the walk.	Third period— Five days after the walk.
Weight	Loss in 5 days— 21.8 oz. (593 gr.)	Loss in 5 days— 55.2 oz. (1,565 gr.) Loss in 4 days— 83.2 oz. (2,358 gr.)	Gain in 5 days— 80 oz. (2,268 gr.)
Temperature	Average of 5 days— 99° Fahr. (37.2° C.)	Average of 5 days— 96.3° Fahr. (35.7° C.)	Average of 5 days— 98.6° Fahr. (37° C.)
Pulse	78	90	74
Respirations.....	22	21	23
Sleep	8 h. 5 m.	3 h. 17 m.	8 h. 29 m.
Miles walked.....	8.2 miles	63.5 miles	2.2 miles
Ingesta.....	100.50 oz. (2,848.82 gr.)	171.47 oz. (4,860.57 gr.)	144.59 oz. (4,098.62 gr.)
Nitrogen of food.....	339.46 gr. (21.994)	234.76 gr. (13.211)	440.93 gr. (28.569)
Cutaneous and pul- monary exhalations	{ 61.63 oz. (1,690.91 gr.)	138.41 oz. (3,875.18 gr.)	62.82 oz. (1,706.78 gr.)
URINE.			
Quantity	37.84 fl.oz. (1,134.0 c. c.)	38.46 fl.oz. (1,138.0 c. c.)	58.14 fl.oz. (1,720.3 c. c.)
Specific gravity.....	1024.9	1028.7	1023.0
Urea	628.24 gr. (40.705)	722.16 gr. (46.803)	726.79 gr. (47.094)
Nitrogen.....	293.18 " (18.729)	337.01 " (21.841)	339.17 " (21.977)
Uric acid.....	2.26 " (0.127)	3.06 " (0.194)	1.42 " (0.082)
Phosphoric acid.....	50.14 " (3.262)	76.63 " (4.965)	56.89 " (3.674)
Sulphuric acid.....	41.57 " (2.693)	53.50 " (3.666)	49.02 " (3.176)
Chloride of sodium..	159.45 " (10.331)	65.08 " (4.217)	312.40 " (20.241)
FECES.			
Quantity	4.08 oz. (115.6)	4.53 oz. (128.3)	6.33 oz. (179.3)
Nitrogen.....	21.91 gr. (1.421)	24.32 gr. (1.576)	33.99 gr. (2.202)
Nitrogen in urea and feces combined.....	{ 315.09 gr. (20.149)	361.52 gr.) (23.217)	373.15 gr. (24.179)
Nitrogen of urea and feces per 100 parts of nitrogen of food	{ 95.53 parts	174.81 parts	91.93 parts
Uric acid per 100 pts. of urea.....	} 0.362 parts	0.409 parts	0.187 parts

The data set forth in these tables are very valuable, inasmuch as they enable us to come to some definite conclusions concerning certain physiological questions, viz., the influence of muscular exercise upon the elimination of nitrogen;

the influence of excessive and prolonged exertion upon the weight of the body, temperature, circulation, and respiration, and the amount of exhalations from the lungs and skin.

Professor Flint treats of these questions in an able and interesting manner, in the second part of his treatise, under the head of physiological deductions, from the observations taken before, during, and after the walk of $317\frac{1}{2}$ miles, executed by Mr. Weston in five consecutive days.

In the first place, with regard to the variations in the weight of the body, our author says :—

“At the outset of the investigations, the weight was 120.5 lbs., which Mr. Weston thought was about normal. During the period of five days before the walk, the variations were not very great, the highest being 12 oz. above, and the lowest 32 oz. below. At the end of the fifth day, the weight was reduced by about 21 oz. On the first day, the weight being unchanged, the exercise was fifteen miles. The food was of the ordinary variety, but its quantity and proportion of nitrogen were about 30 per cent. above the average for an ordinary man. On the second day, the diminished exercise, the food being less, but still above the normal average, will account for the increase in weight of 12 oz. On the third day, the exercise was the same as on the second day, but the food was reduced a little below the normal average, which will account for 20 oz. loss of weight. On the fourth day, the food was still below the average, being about the same as on the previous day, but it contained a large proportion of nitrogenized matter, over 20 per cent. more than on the third day. The exercise was fifteen miles, which, with the diet, will account for 24 oz. loss of weight. On the fifth day, the food was increased to a little above the average, and it contained an immense amount of nitrogen, about 35 per cent. above the average. This fact, with the absolute muscular repose and ten hours' sleep, as a preparation for the walk, will readily account for 11 oz. increase in weight. During this period of five days before the walk, the average quantity of food and drink was 100.5 oz., containing 339.46 grains of nitrogen, the ordinary average being 90 oz., containing 310 grains of nitrogen. The average discharge of nitrogen by the urine and feces was 95.53 parts per 100 parts of the nitrogen of food; which is about normal. It is thus evident that the variations in weight during a period of five days of ordinary life can be readily explained in accordance with generally-accepted physiological principles.

“In endeavouring to explain the variations in weight that occurred during the walk, and for the succeeding five days, the extraordinary amount of muscular exertion introduces new elements to be considered. These have a most important bearing upon the subject of nutrition, disassimilation, and ‘the source of muscular power,’ about which so much has been written within the past few years.

“First: What tissue was consumed, the products being thrown off, during the effort of walking $317\frac{1}{2}$ miles in five consecutive days? Was it the muscular substance? The importance, as regards our ideas of nutrition, of a positive and definite answer to this question, can hardly be overestimated.

“The loss of weight was undoubtedly due in a great measure to the excessive muscular exertion; but in part, also, to change in diet. This proposition does not demand discussion.

“The loss must have been either in liquids, fats, or muscular substance.

“It is not probable that the loss was due, to any great extent, to a diminution in the proportion of liquids, for the excessive loss from the skin was instantly supplied by liquids taken into the stomach. It is not necessary to cite experiments which show that loss by the skin, as it occurs in hot-air or vapor baths, or in working for an hour or more at a high temperature, is readily compensated by liquid ingesta, as this fact is well settled in physiology.¹ A glance at the daily tables of food and drink will show that, during the five days of the walk, Mr. Weston took from 8 lbs. 8 oz. to 10 lbs. 11 oz. of liquids.

¹ See my work on Physiology, New York, 1870, vol. iii. p. 140 et seq.

"If the loss were due to a consumption of non-nitrogenized matters, it would be chiefly of fat, and would be represented by the carbonic acid of expiration. It is certain that the non-nitrogenized constituents of the body do not contribute to the formation of the nitrogenized excrementitious matters.

"If the loss were due to a consumption of the nitrogenized elements of the body, principally of the muscular tissue, this loss, under the extraordinary muscular effort, would be represented by the nitrogen of the excretions. It is not probable that the nitrogenized constituents of the body are, in any considerable amount, changed into non-nitrogenized matter and exhaled under the form of carbonic acid, though this may occur to a slight extent.

"The question, then, resolves itself to that of the relative consumption and elimination of nitrogenized matters. The following are the facts on this point, observed during the five days of the walk:—

"During the five days of the walk,¹ Mr. Weston consumed in all 1,173.80 grains (76.055 grammes) of nitrogen in his food. During the same period, he eliminated 1,807.60 grains (116.084 grammes) of nitrogen in the urine and feces. This leaves 633.80 grains (40.030 grammes) of nitrogen, over and above the nitrogen of the food, which must be attributed to the waste of his tissues, and probably almost exclusively to the waste of his muscular tissue. According to the best authorities, lean meat, uncooked, or muscular tissue, contains 3 per cent. of nitrogen.² The loss of 633.80 grains (40.030 grammes) of nitrogen, would then represent a loss of 21,127.00 grains (1,334.33 grammes), or 3.018 lbs. of muscular tissue. The actual loss of weight was 3,450 lbs. (1,565.00 grammes). This allows about 0.43 lb. (230.67 grammes) loss unaccounted for, which might be fat or water.

"The correspondence of these figures of loss calculated from the amount of nitrogen eliminated with the actual loss in weight leaves no room for doubt with regard to the fact that the immense exertion during this period of five days was attended with consumption of the muscular substance. Those who have adopted the view that the muscular system is like a steam-engine, consuming in its work food as fuel and not its own substance, may say that this is an extraordinary case, as it undoubtedly is; but the facts developed by the foregoing observations prove, none the less conclusively, that the muscular system may consume its own substance by exercise, even when the individual takes all the food required by his appetite. It can hardly be, however, that the foregoing facts are not in accordance with a general physiological law.

"It will be interesting now to study the behaviour of the system after the walk, when there was almost absolute repose, and when the quantity of nitrogen taken with the food was largely increased. The important question here is the following:—

"In the return of the weight to the normal standard, did the muscular tissue take up nitrogen to repair the excessive waste engendered by the five days of exertion?

"In two days after the walk, the weight had increased to within four ounces of the standard at the beginning of the observations, five days before the walk. It is not to be expected that this increase would be due entirely to appropriation of nitrogenized matter by the muscular system. Reference to the tables of diet for these two days shows that the food taken was about 155 oz. each day, the normal average being assumed at 90 oz., an excess of a little more than 70 per cent. The nitrogen taken was about 50 per cent. in excess of the normal amount. The tables also show a large proportion of non-nitrogenized matter in the food on those days. The exercise was only two miles daily. Mr. Weston gained in weight 4.5 lbs. He retained in his system an amount of nitrogen equivalent to 1.1 lb. In view of the muscular inactivity and the large proportion of non-nitrogenized matter in the food, it is fair to assume that the remain-

¹ I have reduced these calculations, on account of their great importance, to grammes.

² Payen, *Précis Théorique et Pratique des Substances Alimentaires*, Paris, 1865, p. 488.

ing 3.4 lbs. was due to accumulation of fat. This, however, is a point incapable of positive demonstration. Taking the entire period of five days after the walk, the gain in weight was five pounds, which brought it 4 oz. above the weight at the beginning of the fifteen days. The excess of the nitrogen of food over the nitrogen of the urine and feces represented, for these five days, an accumulation of 1.6 lb. of muscular substance. During this time there was almost complete repose of the muscular system. The daily quantity of food was about 61 per cent. over the normal average, and the nitrogen, about 42 per cent. over the average. The food contained, also, a large proportion of non-nitrogenized matter.

"These facts seem to indicate that, after the immense effort in walking 317½ miles in five consecutive days, for five days of muscular inactivity, the quantity of food being large and containing a greater proportion of non-nitrogenized matter than the food taken either before or during the walk, the muscular system appropriated 1.6 lb. of nitrogenized matter, and the entire body accumulated about 3.4 pounds of fat. It is well known that athletes, after a season of severe training by exercise and nitrogenized diet, accumulate fat very rapidly, when the muscles are allowed repose and the diet is unrestricted."

During the period of five days immediately preceding the great walk, Mr. Weston's daily temperature varied but little, the range being from 98° to 99.7° F. The variations in temperature during this period seemed to bear some relation to the quantity of nitrogenized food consumed, rather than to the amount of exercise taken. In the next period of five days, Mr. Weston walked 317½ miles. The variations in temperature while making this severe effort were very remarkable and highly interesting from their physiological relations.

"On the first day, between 12.15 A.M. and 10.32½ P.M., Mr. Weston walked eighty miles. His temperature was taken eight minutes after he had completed the walk, and was 95.3° Fahr. (35.3° C.), 4.3° less than the last temperature taken before the walk was begun. This is an immense reduction, greater than ever occurs under the ordinary conditions of health, and can be attributed only to the extraordinary muscular exertion during the day.

"On the second day, between 4.58 A.M. and 4.5 P.M., Mr. Weston walked forty miles, when he stopped for 6 hours and 19 minutes. At 10 P.M., about six hours after the stop, the temperature was 94.8° Fahr. (34.9° C.), a reduction from the temperature of the first day of 0.5°. Mr. Weston did not sleep well, as he had hoped to, during the six hours. At 10.24 P.M., he began his first effort to walk one hundred and twelve miles in twenty-four consecutive hours. I now think the further lowering in the temperature was an indication of want of proper reaction after the walks he had already accomplished. Had I appreciated the facts at that time, I would have advised him to have deferred his first attempt to accomplish the hundred and twelve miles until a later period. As it was, the attempt was a failure.

"As on the first day, the lowering in temperature is only to be attributed to the excessive and prolonged muscular exertion.

"On the third day, between midnight of the second day and 10.52 P.M., Mr. Weston walked ninety-two miles. At 11.15 P.M. the temperature was 96.6° Fahr. (35.9° C.), 1.8° higher than on the second day.

"On the fourth day, Mr. Weston walked fifty-seven miles between 1.33 A.M. and 10.30 P.M. The temperature, taken at 10.40 P.M., was 96.6° Fahr. (35.9° C.), the same as on the third day. This was the day on which the walk was interrupted by nervous prostration.

"On the fifth day, Mr. Weston walked forty and a half miles, between 9.56 A.M. and midnight. He continued walking for fifteen minutes after midnight. He was in fine spirits all day. During this twenty-four hours, for the first time, he got sufficient refreshing sleep. He slept nine hours and twenty-six minutes. The temperature, taken at 1.30 A.M. of the next day, was 97.9° Fahr. (36.6° C.); an increase of 1.3° over the temperature of the day before.

"It is difficult to explain satisfactorily the elevation of temperature by 1.8° on the third day, the day of the longest walk, and the same temperature on the

fourth day, when Mr. Weston broke down completely. The temperature, however, on these days was still 2.4° below the average of the five days before the walk, and 2° below the average of the five days after the walk. The elevation of temperature on the fifth day, by 1.3° , was probably on account of the sleep of nine hours and twenty-six minutes.

"The average temperature during this period was 96.3° Fahr. (35.7° C.); 2.7° below the average of five days before, and 2.3° below the average of five days after the walk. The tolerably uniform depression of temperature during this period of excessive exertion shows pretty conclusively that severe and prolonged muscular exercise diminishes the heat of the body. It has been observed that during or immediately after moderate exercise the heat of the body is increased, and that the actual temperature of the muscles is sensibly elevated;¹ but this is very different from the immense muscular and nervous strain to which Mr. Weston subjected himself for five days. The fact of diminution of temperature during this period remains, without any explanation, except that it was probably due to some unusual condition of the nervous system."

Not the least interesting part of Professor Flint's monograph is the section in which he treats of the influence of exercise upon the elimination of nitrogen, chiefly in the urea, and the relation between the nitrogen discharged and that ingested.

In Tables B¹, B², and B³, is recorded the quantity of nitrogen contained in the food daily consumed by Mr. Weston during the fifteen days which he was under observation. In Tables C¹, C², and C³, is contained the amount discharged from the body during this time, in the feces and urine. For the first five days the nitrogen of the urea and feces amounted to 315.09 grains daily, that of the food to 339.46 grains. Consequently, for every 100 parts of the nitrogen of food, there were excreted in the urea and feces 95.53 parts, which may be taken as the normal average under ordinary conditions. From these figures the following important conclusions may be drawn:—

"1. Under ordinary conditions, about 95 per cent. of the nitrogen of food is represented in the urea and feces, the remaining five per cent. may be put down to nitrogen discharged in other ways, and to an allowance for error in the estimates, particularly in the food.

"2. In view of the extraordinary powers of endurance of Mr. Weston, and his habit of walking long distances, I do not think that the variations in the amount of exercise during the five days are to be regarded as sufficient to influence, to any great extent, the elimination of nitrogen; and I consider that these variations are chiefly due to the nitrogen of the ingesta. The influence of the food is undoubtedly manifested in a more marked manner one or two days after, than on the day on which the excess of nitrogen is taken. This fact has been recognized by physiologists, especially since the researches of Lehmann, to which reference has already been made.² On the first day there was about 30 per cent. of excess of nitrogen in the food, and 89.49 parts of nitrogen discharged per 100 parts of nitrogen taken in. On the second and the third day, the nitrogen of the food was a little below the average. On these days, there was an average of 112.87 parts of nitrogen discharged per 100 parts of nitrogen taken in. On the fourth day, the nitrogen of the food was slightly in excess, with 89.75 parts per 100 discharged. On the fifth day, the nitrogen in the food was very largely in excess (42 per cent.), with 72.67 parts per 100 discharged. The absolute quantity of nitrogen discharged on the fifth day was large, but the proportion per 100 of the nitrogen of food was overbalanced by the immense quantity introduced.

"What is the mechanism of the influence of nitrogenized food upon the discharge of nitrogen by the excretions? Does the excremental nitrogen come

¹ For an account of different observations on this point, see my work on Physiology, New York, 1870, vol. iii., Nutrition, p. 413.

² Lehmann, Physiological Chemistry, Philadelphia, 1855, vol. i. p. 150.

from a direct change of the nitrogenized constituents of the blood into urea in the blood itself, or is it derived from the nitrogenized food used, through the blood, in building up the nitrogenized semi-solids of the body, passing into the excretions through the processes of nutrition and disassimilation?

"Although the answer to this question is, perhaps, beyond the limits of actual demonstration, the attainable facts point very strongly to the following solution:

"The nitrogenized food occupies several hours in its digestion and appropriation by the blood, where it is changed into the nitrogenized nutritive principles of the circulating fluid. The process of its appropriation by the nitrogenized elements of the tissues, particularly the muscular system, is probably slower still. The chief product of disassimilation of the nitrogenized elements of the tissues is urea; and its separation is very slow and gradual, part of it being taken up from the tissues directly by the blood, and part passing into the blood by the lymph. This fact is illustrated by the slow accumulation of urea in the blood after extirpation of the kidneys. If this be the mechanism of the production of urea, the increase in its quantity would be marked for a day or two after the introduction of an excess of nitrogenized food, which is a fact sufficiently well demonstrated by actual observation. If the excess of urea were directly formed in the blood from an excess of nitrogenized food, being discharged by the urine, and leaving a stated and but slightly variable amount resulting from the actual disassimilation of the tissues, its increased discharge from an excess of nitrogenized food would be more rapidly developed."

A careful study of the quantity of nitrogen taken in and discharged every day, for the next period of five days, as exhibited in the tables, shows that excessive and prolonged muscular exertion increases enormously the excretion of nitrogen, and that the excess of nitrogen discharged is due to an increased disassimilation of the muscular substance. The absolute discharge of nitrogen by the urea and feces for each day, without considering the nitrogen of the food, is in nearly uniform proportion to the number of miles walked. During the walk of $317\frac{1}{2}$ miles in five consecutive days, for every 100 parts of nitrogen taken in with the food, there were discharged in the urea and feces 174.81 parts, against 95.53 parts per 100 for the five days before the walk, and 91.93 parts per 100 for the five days after the walk.

It will thus be seen that the conclusions which seem naturally to flow from the observations embodied in the work before us tend to support the view advanced by Liebig, nearly thirty years ago, that the elimination of nitrogen is to a great extent a measure of the waste of the nitrogenized elements of the tissues, and that this is increased by exercise. They are certainly more or less opposed to the views of Bischoff and Voit, and Fick and Wislicenus, in Germany, and of Frankland, Haughton, and Parkes, in England.

J. A. M.

ART. XXIV.—*Medico-Chirurgical Transactions*. Published by the Royal Medical and Chirurgical Society of London. Vol. LIII. 8vo. pp. lxiv., 305. London: Longmans, Green, Reader and Dyer. 1870.

General Index to the first fifty-three volumes of the Medico-Chirurgical Transactions, etc. 8vo. pp. vi., 355. London: Longmans, Green, Reader and Dyer. 1871.

THE present volume of the excellent series of *Transactions* issued by the Royal Medical and Chirurgical Society of London, is less bulky than some of its predecessors, but falls behind none of them in the varied interest of its contents, and the sound practical teaching which it conveys. Of the thirteen

papers in the volume before us, eight are especially addressed to surgeons, and to these we shall first invite the attention of our readers; our comments shall be brief, for extracts of the majority of these communications have already appeared in the quarterly summaries of preceding numbers of the Journal.

Art. I. *On Amputation at the Knee-Joint*, by GEORGE POLLOCK, F.R.C.S., etc.—This is a valuable paper, which will, we doubt not, do much towards establishing knee-joint amputation as a recognized resource in British surgery. After a short historical account of the introduction of the operation under consideration, Mr. Pollock narrates the cases, eight in number, in which he has himself employed this mode of treatment, and adds an interesting summary of the opinions and experience of various English hospital surgeons, terminating his paper with two tables, one embracing forty-eight cases operated on in Great Britain, and the other forty-five cases taken from Dr. John H. Brinton's well-known communication to the number of this Journal for April, 1868. Mr. Pollock's experience with knee-joint amputation has been very favourable, only one of his eight cases having terminated fatally, and he is naturally somewhat enthusiastic as to the merits of the operation. For our own part, though we doubt not that, in a few cases, knee-joint amputation is indicated in preference to amputation at any other point, we must confess that our experience agrees with that of Mr. Durham, here quoted, that, in traumatic cases, very seldom has there "seemed the slightest inducement to try amputation through the joint with a fair chance of success. The injury has either been so low as to leave room for amputating below the knee, or has extended so high as to prevent the formation of satisfactory flaps without removing a portion of the femur." Indeed, a moment's reflection will show that the lateral expansion of the femoral condyles is so great, that a flap large enough to cover in a knee stump satisfactorily will, in most instances, suffice equally well for an amputation through the tibia, which we cannot but think is, when practicable, a safer procedure; again, in cases of joint disease, in which the bone is not so much implicated as to require amputation above the condyles, we think Sir Wm. Fergusson's "richer vein" of knee-joint excision is commonly preferable to any operation which entails the sacrifice of a limb; so that while far from wishing to undervalue the merits of the operation of which Mr. Pollock thinks so highly, we cannot but doubt whether it will ever be found so generally applicable as he seems to expect.

Art. III. *A Case of Compound Fracture of the Patella, with an Analysis of sixty-nine Cases of that Injury*, by ALFRED POLAND, F.R.C.S., etc.—This is a paper of very great interest and value, and most clearly, we think, proves the incorrectness of the common dictum, that compound fracture of the patella invariably requires amputation. An abstract of Mr. Poland's case has already appeared in this Journal (No. for April, 1870, p. 554), so that we shall confine our attention at present to the statistical investigations with which his paper is concluded. Four tables are given: (1) compound fracture of the patella associated with incised wounds—eight cases; (2) compound fracture of the patella associated with lacerated and contused wounds—forty cases; (3) compound fracture of the patella associated with gunshot wounds—twenty-one cases; and, in an appendix, (4) contused and lacerated wounds with compound fractured patella and fractured condyle of femur—sixteen cases. Three cases of recovery, referred to by Prof. Hamilton as having occurred in the practice of Dr. Post of New York, are not included in these tables, because on attempting to verify the reference given in Hamilton's work on Fractures, Mr. Poland was not able to find any account whatever of the cases in question. In one case of fracture with incised wound, and one of fracture with gunshot wound, the joint was not

involved, but in every other instance the articulation was laid open. Of the eight cases in the first table, none were amputated, and six recovered while two died. Of the forty cases in the second table, thirty recovered—ten with movable joints, five with partial, and eleven with complete anchylosis, and four after secondary amputation—while nine died (one after amputation), the result in the remaining instance not having been ascertained. Of the twenty-one cases in the third table, eighteen recovered—two of them having movable, three partially, and eight completely anchylosed joints—while three died; amputation was not performed in any instance. Of the sixteen more complicated cases embraced in the fourth table, only ten recovered—two with movable joints, two with partial, and two with complete anchylosis; two after excision (one of these is considered of doubtful authenticity); one after secondary removal of ball and of several sequestra, and one after primary amputation—while six died, one without operation, one after secondary amputation, one after primary, and three after secondary excision.

The following "conclusions," to which Mr. Poland is led by a study of the cases which he has collected, seem to us reasonable and well founded:—

"1. That compound fractures of the patella are not necessarily mortal injuries, and do not require immediate amputation or resection, except when complicated with other injuries of the joint structure. In this latter case the injury done to the integuments and surrounding tissues is such that amputation is preferable to excision.

"2. In all cases we should attempt to save the limb, and adopt the ordinary treatment as for simple fractures of the patella, whether comminuted or otherwise. The wound should be accurately closed by sutures, but employed with judgment; strapping and relays of ice should be constantly used.

"3. That when suppuration fully sets in, and which must always be expected in severe lacerations and in patients of unsound condition, we must not hesitate for one moment to make free incision into the joint. Drainage-tubes may be used, but they are unnecessary.

"4. Amputation or resection is only to be resorted to when the powers of the patient fail to repair the injured joint.

"5. The extraction of fragments has been resorted to both primarily and secondarily with success; but, as a rule, detached and loose portions had better be removed at once, providing this does not necessitate further injury to the joint; if attached and firmly adherent, they had better by far be left to take their chance of co-adhesion, or to be thrown off and detached during the suppurative process."

Art. IV. *Case in which a Plate with Artificial Teeth was Swallowed, Detected in the Stomach, and Extracted*, by LOUIS STROMEYER LITTLE, late Assistant Surgeon to the London Hospital. Communicated by T. B. Curling, F.R.S.—This is certainly a very curious case; the foreign body, a gold plate with five artificial teeth attached, measured an inch and three quarters in length by an inch and a quarter in width, and its removal was effected with a "coin catcher," or "whalebone probang with a split ring opened out so as to form a hook at its end." Mr. Little properly advises that, when the surgeon is satisfied that a foreign body is lodged in the stomach, and will in all probability not be removed by nature, an effort should be made to effect extraction in the way which proved so successful in the case which he has recorded.

Art. V. *On Excision of the Joints for Disease, and specially of the Knee, Hip, and Elbow; with the Histories of Twenty Typical Cases and their Results*, by FREDERICK JAMES GANT, F.R.C.S., etc.—Nine excisions of the knee are narrated, with six satisfactory recoveries and three subsequent amputations, one of them having been performed after a re-excision, while a second (performed by another surgeon) is considered by Mr. Gant to have been unneces-

sary; the average duration of treatment in the successful cases was three months. The hip was excised in six cases, in all of which the patients recovered with useful limbs, and the elbow in five cases, three of which are known to have terminated in permanent recovery (one after the re-excision), while in two the ultimate result has not as yet been ascertained. In not one of the twenty cases did death follow the treatment employed. Mr. Gant's remarks upon the conditions which demand operative interference, and which respectively indicate excision or amputation, seem to us very judicious, though we think that in the case of the hip, he might have properly supplemented the rule that whenever the general health is manifestly failing, excision should be resorted to without further delay, by adding as a converse proposition that so long as the general health is well maintained, expectant measures may properly be persevered in: in this respect the hip differs from any other joint of the body, and excision in this locality is so grave an operation under any circumstances, that it should, we think, be reserved for cases in which all less severe modes of treatment have proved futile.

Mr. Gant refers to an interesting, and he thinks a unique case, in which, as he expresses it, "nature undertook the operation of excision *en masse*, for she severed and discharged the greater portion of the head of the femur through one of the fistulous tracks." This "natural excision of a joint," he thinks, "will be singularly suggestive to operative excisionists, and should be equally admonitory to those surgeons who blindly oppose the operation."

In the well-known monograph on Excisions published in 1861 by Dr. R. M. Hodges, of Boston, will be found, at page 105, a table of no less than twenty-one cases of spontaneous separation of the head of the femur. Mr. Gant's paper is illustrated with two lithographic plates.

Art. VI. *An Analysis of One Hundred and Eighty-four Cases of Stone in the Bladder of the Adult treated by Lithotrity*, by Sir HENRY THOMPSON, F.R.C.S., etc.—This is probably the most valuable single contribution to the history of lithotrity that has ever been made, and is certainly the most important paper which has appeared on the subject in the English language, since that of Sir B. C. Brodie, in the 38th volume of the Transactions. Sir H. Thompson's 184 cases, or, adding eleven mentioned in a supplementary note as having been operated on since the reading of his paper, 195 cases, gave but twelve deaths, or but a little more than six per cent.¹ This is certainly a very gratifying result, and amply confirms the opinion now entertained by most authorities, that lithotrity in properly selected cases is not only a very successful procedure in itself, but one which is decidedly preferable to lithotomy. At the same time, the positive diminution in mortality by the introduction of lithotrity is, we believe, less than is usually supposed by its advocates, and we quite agree with the opinion expressed by Sir H. Thompson, in his "Practical Lithotomy and Lithotrity," that unless a surgeon is able to discriminate between those cases which are, and those which are not, suited for the latter operation, his patients will, upon the whole, fare better by his confining himself to the cutting method.

Art. VII. *On Supra-Condylloid Amputation of the Thigh*, by WILLIAM STOKES, Jr., M.D., Surgeon to Richmond Surgical Hospital.—This paper gives a description of a modification of Gritti's plan of amputating at the knee, which plan is itself a modification of that introduced by Mr. Carden. The peculiarities of Dr. Stokes's method are:—

¹ In Sir H. Thompson's "Practical Lithotomy and Lithotrity" (last edition), the figures are increased to 204 cases, with 13 deaths, leaving the percentage of mortality about the same.

"First. That the femoral section is made in all cases at least half an inch above the antero-superior edge of the condyloid cartilage.

"Second. That in all cases the cartilaginous surface of the patella is removed.

"Third. That the flap is oval, not rectangular.

"Fourth. That there is a posterior flap fully one-third of the length of the anterior flap."

Two cases are narrated in which this operation was successfully employed, and the appearance of the stump in the first case is shown in a lithographic plate.

Art. VIII. *A Case of Extroversion of the Bladder in a Female treated by Operation*, by EDWARD BARKER, Surgeon to the Melbourne Hospital, etc. Communicated by T. Holmes, F.R.C.S.—The operation, or rather operations, for three were required, consisted in dissecting up flaps on either side of the extroverted bladder, uniting them in the median line by means of deep and superficial sutures (the former secured with the clamp used by Mr. Hutchinson in cases of lacerated perineum), and relieving tension by deep incisions made beyond the line of the flaps. The treatment was ultimately quite successful, as shown in a plate which illustrates the paper, but we cannot help thinking that an equally good result might have been obtained with much less trouble, had the operative procedure devised by Prof. Wood, of King's College, been resorted to.

Art. IX. *On Adenoid Vegetations in the Naso-pharyngeal Cavity: their Pathology, Diagnosis, and Treatment*, by WILHELM MEYER, M.D., Copenhagen. Communicated by John Marshall, F.R.S.—This is a paper of much interest. The most prominent symptoms of "adenoid vegetations" are, an inability to pronounce the *m* and *n* sounds; a peculiar want of resonance in the voice; obstruction of the nares, causing the mouth to be kept open; a copious secretion of thick greenish or grayish mucus from the upper part of the throat; perhaps occasional hemorrhage; and frequently recurring attacks of deafness and ringing in the ears, accompanied sometimes with chronic catarrh of the tympanum, or otorrhœa. Exploration of the naso-pharyngeal cavity, by means of the forefinger introduced behind the soft palate, reveals an aggregation of soft masses of a reddish or yellowish colour and of various shapes, which may spring from any part of the cavity in which they are found, except the nasal septum.

"The microscopic characters of these growths establish their identity with the closed follicles of the mucous membrane from which they arise, the relative quantity of bloodvessels and the presence of real areolar tissue forming an immaterial difference between them. The most prominent structural character of these growths as well as that of the mucous lining of the naso-pharyngeal cavity being adenoid, I propose," says Dr. Meyer, "to designate them '*adenoid vegetations*.'"

The pathology, symptoms, diagnostic marks, and etiology of adenoid vegetations are fully discussed, but our space will only permit us to refer to the mode of treatment recommended, which, in the case of small and soft vegetations, consists in cauterization with nitrate of silver, followed by douches of a solution of common salt or of bicarbonate of soda, and, in the case of the larger and firmer growths, in "crushing or scraping off the tumours as near their base as possible," with an instrument provided with a ring-shaped blade, devised by Dr. Meyer for the purpose. Hemorrhage after the operation is checked by using the cold douche, and by touching the bleeding points with caustic. This paper is adorned with a plate giving very beautiful illustrations of the appearance of the adenoid vegetations as seen with the rhinoscope, and of their microscopical characters.

J. A., JR.

We shall next invite attention to the medical papers in this volume.

Art. I. *Experiments on the Action of Certain Diuretics on the Urine in Health*, by F. B. NUNNELY, M.D., Assistant Physician to the Victoria Park Hospital. Communicated by John Eric Erichsen, Esq.—This paper contains an account of some experiments which Dr. Nunnely made on himself with the object of ascertaining the influence of citrate and acetate of potassa, of sp. ætheris nitrosi, and of oil of juniper, on the water, urea, and solids of the urine in health. The experiments seem to have been made with great care, each set lasting about twenty-eight days. On the middle twelve of which the medicine under examination was taken, the medicine-free days before and after this period affording a standard for comparison.

The following conclusions are drawn from his observation:—

“That in health,

“1. Citrate and acetate of potash only slightly increase the quantity of water excreted by the kidneys.”

“2. They distinctly lessen the amount both of urea and of solids excreted.”

“3. Spiritus ætheris nitrosi slightly increases the amount of urinary water.”

“4. It decidedly reduces the quantity both of the urea and solids.”

“5. Oil of juniper slightly reduces the amount of water excreted.”

“6. It appreciably increases both the urea and solids.”

These results would seem to justify the inference that the increased secretion which follows their use in disease “takes place in consequence of the state of the blood due to the renal or other disease present.”

Art. X. *On the Anatomy of a Case of Molluscum Fibrosum*, by C. HILTON FAGGE, M.D.—An abstract of this paper appeared in the number of this Journal for October, 1870, p. 551.

Art. XI. *On Certain Morbid Changes in the Nervous System, Associated with Diabetes*, by W. HOWSHIP DICKINSON, M.D., F.R.C.P., etc. etc.—An analysis of this paper was presented in the number of this Journal for April, 1870, p. 539.

Art. XII. *Anosmia; or, Cases Illustrating the Physiology and Pathology of the Sense of Smell*, by WILLIAM OGLE, M.D., F.R.C.P., etc. etc.—This paper was noticed in the April number of this Journal for last year, p. 537.

Art. XIII. *Report of the Committee Appointed to Investigate Bain's and Pacini's Methods of Restoring Suspended Animation*. Committee: W. S. SAVORY, F.R.S., Chairman; J. B. SANDERSON, M.D., F.R.S.; HENRY POWER; THOMAS PICK, Secretary; G. GASCOYEN, *ex officio*.—Experiments were made upon the dead human body in order to ascertain the relative merits of the two methods referred to the Committee, not only to each other, but also to other methods already in use, and especially to that proposed by Dr. Silvester; the three modes being employed alternately on the same subject. In some of the experiments the Committee had the advantage of seeing Dr. Bain and Dr. Silvester perform experiments in the manner advocated by themselves.

The results of the experiments indicated very clearly that more air is introduced into the chest by Bain's method than by either of the two others, and that by either Dr. Bain's or Dr. Silvester's method more air is changed than in the act of ordinary tranquil respiration. The size of the body experimented on, the amount of the mobility of the walls of the chest, and the rigidity of the muscles, have, however, a decided influence upon the result. The Committee were unanimously of the opinion that the method advocated and practised by Dr. Bain is but a modification of the plan usually known as Silvester's, and involves no new principle of action.

Dr. Bain thus describes his method:—

"The patient being laid on his back on a table, if convenient, the mouth and nostrils are to be wiped dry, the clothes, from the upper part of the body at least, having been removed. The operator stands at the head of the patient, placing the fingers of each hand in the axilla in their front aspects, with the thumbs on the clavicles, and pulls the shoulders horizontally towards him with a certain degree of power. Upon relaxing his pull, the shoulders and chest return to their original state."

Dr. Bain also occasionally employs another plan, which he terms his "Second Method," and which he thus describes: The shoulders are elevated by taking hold of the hands and raising the body about a foot off the table, the arms being elevated at an angle of 45° over the head, J. H. H.

Every subscriber to the Medico-Chirurgical Transactions will be pleased to receive the General Index to the fifty-three published volumes of the series. It is twenty years since the last Index (upon which this is based) was published, and during this period many of the most important papers read before the Medical and Chirurgical Society have appeared, so that it was none too early for the present volume to be issued. The new index occupies over a hundred pages more than the old, and, by substituting cross-references in some cases for repetitions, is, though less elaborate, yet for all practical purposes quite as useful as its predecessor. The new differs from the old index, also, in not containing a list of the illustrations which have appeared in the several volumes: but this can very well be dispensed with, and, upon the whole, we think both the compiler, Mr. Wheatley, and the Council of the Society, may be fairly congratulated upon the very satisfactory result of their labours. J. A., Jr.

ART. XXV.—*The West Riding Lunatic Asylum Medical Reports*. Vol. 1. Edited by J. CRICHTON BROWNE, M.D., F.R.S.E. pp. 265. London: J. & A. Churchill, 1871.

IN his preface to this book the editor mentions the current accusation that the medical officers of lunatic asylums accomplish no scientific work. Their time, it is alleged, is consumed in the cares of general and financial management, "or in devising ill-judged amusements for their charges." Moreover, he says, they are charged with exhibiting, when they do enter the literary field, narrowness, prejudice, and "philosophical phantasms." While denying the last charge, and indignantly resenting the inhuman disparagement of the time-engrossing personal attention bestowed on the mental and bodily comfort of the victims to the saddest affliction known to man, the editor acknowledges that his brethren in the specialty have been somewhat remiss in imparting to others the results of their experience. Hereafter, as medical director of the asylum named above, Dr. Browne proposes to publish a yearly volume of essays, cases, and experiments, compiled from the practice of the institution. The design is praiseworthy, and the execution, so far, very commendable. The essays printed, if not in all instances very original, are yet generally sensible and useful.

While commending to the superintendents and assistants in our own asylums the example set them by their English brethren, we would remind them that their first duty is towards their patients. In our hospitals the proportion of officers to patients is often so small that the former have little time for literary

work. Between the writing of an essay and the brightening of an otherwise gloomy hour for a patient hovering on the borders of convalescence, there should be no hesitating choice. In the silence and comparative leisure of the evening, the physician may wish to write for a medical journal the history of a remarkable case; or the facts and deductions connected with a series of experiments in the use of some potent drug; or observations made with some of the wonderful instruments which this century has added to his means of diagnosis. But, as he dips his pen in ink, he recalls the imploring words, and still more moving looks, of some poor patient, speaking perhaps for half a dozen others—"Oh, doctor, do come into our ward this evening." He goes; and passes the evening in the lamentably unscientific and undignified employments of whist, or round games, or blind-man's buff. The essay is lost to the world—perhaps forever; but some sad hearts have been cheered; some despairing spirits wakened once more to hope and effort by the sense that some one cares for them; and some doubtful convalescence rendered certain. The well-fitted physician to the insane realizes that he is not a mere mainspring to a clock-work routine; nor a mere cool scientific observer of the natural history of disease; still less a mere apothecary, with his dose for every symptom. All these may he be, but must be vastly more. To those whose minds are hopelessly darkened he is the watchful guardian and defence, protecting from oppression and seeking ever their comfort. But to those whose malady is not necessarily permanent he stands in the tenderest and most responsible relations. Often he is the one earthly being in whom they will confide. Often he alone can inspire the hope of recovery and the effort towards it. Even if not loved and trusted by the patient, he alone can direct the use of means, and control the circumstances, which may determine recovery, or may sink forever in the gulf of chronic insanity. Fully knowing the value of his personal influence over his patients, is he, then, to be blamed if he decline to shut himself up in his study to write essays? Of course and by all means let the essays be written, and records of experiments made, if only the nearer and higher duty be not neglected. But let it not be forgotten that each poor lunatic has a sacred claim upon the thought and care of the medical director.

The first article in the book is by its editor, Dr. J. CRICHTON BROWNE. "*Cranial Injuries and Mental Diseases*" is the title of his remarkably suggestive paper. It sets forth and supports certain ideas which seem to be original. If not so, they certainly have been rarely stated and little used. One is, that the increased insanity accompanying civilization is due to the increased bulk of the foetal head without proportionate enlargement of the maternal pelvis. This generalization seems to have been reached through having the attention directed to cases in which idiocy, weakness, insanity, or nervous irritability appeared traceable to cranial compression during labour. Convinced by personal observation that in many cases insanity, or the "insane temperament," was the direct result of cranial injury during parturition, either by forceps or by the disproportion between pelvis and head, the writer naturally asked himself two questions: First, why is labour more difficult in civilized than in savage women? Second, why the increase of insanity with advancing civilization? The first, answered, as before mentioned, by the larger cerebral development of the child of civilization, contains the answer to the second—at least to one who believes cerebral compression in the nascent child to be a cause of mental disease. Certainly this important inference as to the cause of increased insanity is the logical result from the premises employed. If we believe that the civilized foetal head is larger than the savage, in proportion to the pelvis; that compression of the head is productive of cerebral disease; and that insanity does in-

crease with civilization—then we must credit Dr. Browne with the discovery and statement of a real and important relation between facts. Of course it does not necessarily follow that in finding a cause he has found the sole cause of increased mental disease. Further investigation is also desirable into the soundness of the premises on which the argument rests.

Dr. Browne gives cases of various degrees of mental and moral alienation in which no cause could be so reasonably assigned as the compression suffered by the brain during parturition. Some of these are well calculated to deter the practitioner from a hasty resort to the forceps, and especially to forbid his lightly yielding to the advice of those who would have him expedite delivery by forcible compression of the head. Dr. Browne believes in a much more frequent connection than has usually been recognized between compression of the foetal head, by natural or artificial causes, and all shades and degrees of subsequent mental weakness, irritability and disease. When actual idiocy has followed such pressure, the connection has been often perceived; but not so generally in cases of unhappy temperament, perverted tastes, and morbid impulses.

The writer directs attention also to the frequency with which cranial injuries, after birth, are followed by mental disease. He begins a somewhat full discussion of cerebral concussion as a cause of mental disease. In children, as compared to adults, while the danger of laceration of the tender brain is greater, that of concussion is less. A very remarkable case is narrated, however, where a boy of ten years induced a considerable degree of imbecility by wilfully rapping his head against the wall for a few minutes at a time for three weeks. We may surmise, however, that this degree of injury from so slight a cause could occur only in a brain strongly predisposed to take on morbid action. Indeed, the act itself, or its motives, would almost indicate insanity.

Injuries with depression of the inner table, it is remarked, are more recoverable in children than in adults, owing to the processes of growth still going on, and tending to remove the deformity.

The remote and persistent mental effects of concussion, Dr. Browne believes, are owing to some occult change in the arrangement of the minute elements of the brain. As an illustration, or perhaps proof by analogy, of the possibility of such a change, he refers to the singular alteration in the molecular constitution of wrought iron, when this has for years been exposed to concussion. Some speculations follow as to the possible influence on the brain of the constant vibration caused by the rolling of railway carriages over iron roads.

Age, previous condition, and locality of lesion, are enumerated as the qualifying circumstances affecting the action of cranial injuries. As to the first, the general law is stated that the results of such injuries tend to the type of mental affection most common to the patient's age. Thus we would be likely to have, in the infant, idiocy; in the young girl, hysterical mania; in the vigorous adult man, mania; in the woman at fifty, melancholy; and in the aged, dementia.

The effect of previous condition influencing results of injury is thus stated: "Idiots, imbeciles, and chronic lunatics" are less affected by a given injury than "persons of average and sound mind." "Those hereditarily disposed to insanity," and those of "nervous diathesis, sensitive, excitable, impulsive, and wayward," suffer more seriously than persons of more stolid constitutions. Feeble health, debility from privation or acute disease, habitual indulgence in excessive excitements, render the subject more liable to grave consequences after cranial injury.

The consideration of the effects of locality of lesion is left for a subsequent paper.

In the "*Observations on the Physiological Action of Nitrous Oxide*," by SAMUEL MITCHELL, M.D., Deputy Medical Director of West Riding Asylum, notice is directed to the possibility of benefit being derived from its stimulant action on the brain in cases of melancholia and dementia. In chronic cases of this sort it is not probable that any lasting good would follow. In a small class of recent cases, where, after subsidence of excitement, the patient seems in danger of falling into dementia, or when the dejection which often follows acute mania, as a first step towards recovery, seems unduly severe or protracted, this powerful agent is worthy a cautious trial. Also in acute dementia, in the young or adult.

The paper on "*The Sphygmograph in Lunatic Asylum Practice*," by GEORGE THOMPSON, L.R.C.P. Lond., Med. Supt. of the Bristol City and County Lunatic Asylum, is interesting and valuable. Starting with a drawing of the tracing obtained from a healthy circulatory system, the author briefly states the respective agency in its production, of the heart, aortic valves, elastic arterial walls, and the capillaries. Then he selects a class of cases in which degeneration of the smaller arteries and capillaries is pretty well known to exist; carefully excluding all in which any disease of heart or aortic valves could be detected. These were cases of "Paresis" or "General Paralysis." Several specimens of these tracings are given, strikingly alike, and just what would be expected where the arteries and capillaries have become less elastic and less permeable. The upward mark is usually somewhat short, indicating perhaps an enfeebled heart—as well as the diminished arterial elasticity to which alone the author refers it. The line of descent is long, gently sloping, broken only by numerous very slight and regular wavy irregularities. The absence of the "aortic notch" is attributed to the unyielding walls of the vessels and the small amount of blood thrown by each ventricular contraction. Unable to empty itself after receiving one wave of blood, the artery can receive but a small wave the second time. Of course this continued fulness and inelasticity of the artery would interfere with the sudden and elastic action which causes the notch.

On the same page with a typical tracing from a case of "paresis," is one copied from Carpenter, taken from a man, otherwise healthy, who had been long immersed in cold water. The resemblance between the two is most striking. The cause of the similarity is pointed out by our author. In the person thoroughly chilled, spasm of the small vessels had temporarily produced an obstruction almost identical in its effects with that permanently existing in the diseased vessels of the paralytic.

The great practical value of these researches lies in their promising a new means of diagnosis in paresis. Those acquainted with insane hospital practice are well aware of the great difficulty of certainly diagnosing this disease in its beginning. The unpleasantness of diagnosing acute, curable mania, when really the patient is smitten with a surely fatal malady, needs no statement. Then also the wonderful periods of illusory improvement, even seeming recovery, so common in the graver disease, simulate so closely convalescence from ordinary mania, that, unless our diagnosis be correct, the bitterest disappointment will surely follow the mistaken hopes of anxious friends. The converse error, less tragical indeed, of pronouncing a professional death-sentence on a patient who lives for many years to laugh at medical mistakes, is scarcely less mortifying to professional pride. Hence the importance of all aids to diagnosis in cerebral disease. Further researches should be made to

prove the value of sphygmographic tracings. These should be taken from other insane, as well as from the paresic.

The conviction that in paresic patients the capillaries and smaller arteries are contracted, whether as cause or effect of nervous disease, naturally led to the experimental use of drugs which influence those vessels. Accordingly, our author found that, after giving ergot to a healthy man, he obtained a tracing resembling that of general paralysis. On the other hand, he found that Calabar bean, given to victims of this disease, did, to a certain extent, restore a healthy action, as shown by the modification of the tracings. Dr. Thompson, seeming to regard spasm as the essence, or at least as the beginning, of paresis, hence hopes for curative effects from the bean. While we cannot share this belief or hope, it is yet possible that temporary benefit may follow the treatment.

An essay upon the "*Ophthalmoscope in Mental and Cerebral Diseases*," by Dr. CHAS. ALDRIDGE, is one of the longest, and perhaps, as opening a field of wide and useful research, one of the most important, in the volume. The writer adverts to the peculiar facilities in insane asylums for examinations of this sort, in the living and the dying, as well as in special circumstances, such as epileptic seizures. Always in the house with his patients, the physician has opportunities which the utter fatuity of many of them enables him fully to use, without adding to their sufferings or wounding their sensibilities.

Very soon after the introduction of ophthalmoscopy, its diagnostic value, as affording a view of small vessels and capillaries very near the brain, and very closely connected with it, was recognized. Incited by his opportunities, and by the example of Dr. Allbutt, who had previously made some observations on the eyes of the insane, Dr. Aldridge resolved to collect a mass of observations upon the patients under his charge. The result is the paper before us. First are given a few examinations of the eyes of the dying and the recently dead. In death from asthenia, the capillaries could be seen emptying themselves into the veins, and the arteries into the capillaries. We mention the phenomena in this order, because the writer says that sometimes, when the capillaries were emptied, a little blood still remained in the arteries. The veins, also, tending to discharge their contents towards the heart, would not always complete the process—hence presenting a beaded aspect. In a patient dying of phthisis, with suffocative symptoms, intense congestion was observed, especially in the veins, a few hours before death. The blood in all the vessels was darker than natural. Dr. A. suggests the possible medico-legal value of ophthalmoscopic examination after death, where suffocation is suspected. The retinal vessels, being protected by their location from atmospheric oxygen, would afford after death a truer representation of the state of the blood before death, than could be had from vessels more exposed.

Further observations, he suggests, may enable us to connect with accuracy certain appearances of the vessels with particular modes of death, and with the time of death. He mentions the ophthalmoscope as a reliable means of distinguishing the suspended animation of profound catalepsy from death.

By far the largest portion of this article is made up of brief records of cases of epilepsy, in which the eyes were examined. But one examination is recorded as made during the convulsive stage. In this the optic disk, or papilla, previously whitened, as the result of a paroxysm just past, became abnormally pink. The arteries were small, and veins natural. In the few observations made during unconsciousness succeeding convulsion, there were found paleness of the disks, and diminished size of arteries and veins, but especially of the former. Dr. Aldridge believes that, at the outset of the epileptic seizure, the cerebral

vessels are overloaded; the return of blood to the heart being prevented by arrest of respiration, and by convulsive action of the cervical muscles. Immediately on the re-establishment of respiration, however, an opposite condition obtains. This seems indicated by the observations made at that time. That anæmia of the brain prevails during natural sleep is generally believed. Unfortunately, it seems impossible to establish the fact by the ophthalmoscope. In the state of semi-stupor following a protracted series of severe fits, an anæmic condition has been observed to continue, even for days. Only when intelligence returned, did the retinal vessels return to their usual aspect.

Of careful and intelligent examinations of the eyes of epileptics in the intervals between their paroxysms, Dr. Aldridge has made and recorded one hundred and two. In a majority of these there was decided hyperæmia of the whole fundus; generally of the passive or venous sort. This state of the small veins would naturally result from oft-repeated distension, such as occurs during the paroxysm. Evidence of hyperæmia is also found by pathologists in the medulla oblongata, in the form of enlarged veins. Our author attributes the gradual mental impairment to the effect of long-continued pressure by dilated vessels upon the brain-cells. He believes he has found a direct correspondence between the degree of mental impairment and the amount of venous hyperæmia of the retina. During the periods of excitement and violence which sometimes follow the fits, he has perceived a proportionately active arterial congestion of the retina or the papilla.

From these considerations the writer naturally passes to the effects of certain drugs upon the optic circulation, especially those most approved in the treatment of epilepsy. Where bromide of potassium has succeeded in diminishing the frequency of fits, the venous dilatation has been observed to lessen; when, after its omission, fits are again more frequent, the hyperæmia fully returns. Since the effect on the vessels follows, rather than precedes, that upon the fits, it is inferred that the primary action of the drug is on the medulla, and not on the vessels or the sympathetic. Other drugs there are, however, which act directly on the nerves of the vessels. Among these, the author selected ergot, nitrite of amyl, nitrous oxide, and hydrate of chloral, carefully noting the effects of each on the retinal circulation. The three cases in which ergot was given, favour the belief that this agent does, through the sympathetic system, produce contraction of terminal arteries and capillaries; confirming the views now generally held, derived from other sources. From the effects observed after eight inhalations of nitrite of amyl, and two of nitrous oxide, it is inferred that a contrary, or paralyzing, effect is produced on the branches of the sympathetic which maintain the tonicity of the vessels. The vessels dilate; the optic disks become pink. This, again, corresponds to the already observed facts of flushing and cerebral excitement. The observations made after exhibition of chloral are inconclusive.

A paper entitled "*A Contribution to the Statistics of General Paralysis, with Remarks*," by J. WILKIE BURMAN, M.B. (Edin.), Assistant Medical Officer, West Riding Asylum, gives the prominent statistical facts of three hundred and forty-one cases, so named, occurring on the books of the Devon County Asylum. The fact that ten cases are reported cured, and are not known to have subsequently relapsed, is wisely regarded as evidence of a mistaken diagnosis. If, after months of observation, men experienced in mental disease could make this mistake, how much more probable is such mortifying error, when the patient is seen but a few times, early in his disease, and often by physicians without experience in this line. But this has already been referred to, in noticing the essay on the sphygmograph. The writer of the article before us suggests

the possible value of the ophthalmoscope as a diagnostic aid in this disease. An eminent American physician has made much use of the ophthalmoscope in the diagnosis of mental disease, but whether his conclusions are entirely well-founded we are not yet sure.

The curious remissions in general paralysis are regarded as hopeful signs that hereafter a curative treatment may be discovered. In this view we can hardly join.

One other thought, worthy of notice, is advanced as to the popularly assigned causes of this disease. The intemperance and excess, so often pointed at as the cause of the disease, may rather be only its earliest symptoms. The whole matter of causation in mental disease is involved in difficulties, and has been the subject of much blundering and foolishness.

A paper "*On the Treatment of Insanity by the Hypodermic Injection of Morphia*," by J. BYWATER WARD, B.A., M.B., Cantab., Assistant Medical Officer, Warwick County Asylum, needs no special notice. We may, however, venture to express an opinion that the advantages of thus giving drugs have been greatly overrated, while their unpleasant and dangerous effects have been ignored or belittled. It is one of those medical fashions which, after a short day of popular favour, will pass into disuse and oblivion. Yet we believe it may be useful and advisable in very rare cases.

A short article entitled "*Mollities Ossium and Allied Diseases*," by GEORGE HENRY PEDLER, L.R.C.P. Lond., late Clinical Assistant, West Riding Asylum, has especial interest, in view of the attention lately directed to some instances, both in England and in this country, where insane persons were found to have broken ribs. It is not strange that the popular mind, already poisoned by the tales of moral maniacs and immoral novelists, should seize on these cases as positive proof of harsh and abusive treatment. The investigation of the individual cases by courts, coroners, and medical men, soon removed this distressing impression. From several independent sources came almost simultaneous testimony to the frequent existence of degenerative disease in the bones of the insane. Once stated, this fact received confirmation from all directions, in Great Britain and America. Many curious cases came to light of fractures from slight causes, and of fractures undiscovered and often ununited for weeks. Whatever may be the nature of the connection between cerebral and osseous disease, none of the witnesses doubt that there is some relation. The alterations observed in the diseased bones correspond pretty nearly to the standard descriptions of mollities ossium; but the course and outward manifestation of the malady seem slightly different. There seems more disposition to break, and less to bend. That pain is not always complained of, is not strange when we learn that the subjects are nearly always much demented. It would seem, too, that in the insane the ribs are the favourite site of the disease. While not pretending to know the exact relation between brain-disease and bone-disease, it does not seem strange that a mal-nutrition—presumptively the result of morbid innervation—should especially prevail in persons whose nervous mechanism has been long deranged.

In the *London Journal of Mental Science* for January, 1871, Dr. George J. Hearder, Superintendent of the County Asylum at Carmarthen, states that of twenty bodies of patients dying during 1870, nine were found with bones in an "abnormal and diseased state." (It seems difficult to believe that these figures represent all or a fair specimen of all the cases dying, yet that is the impression conveyed.) Detailed descriptions of the physical qualities of the ribs and sternum are given in eight of these. They correspond closely with those of other writers, some of which will presently be quoted. The bones were soft,

could generally be broken between the thumb and finger, and gave no crepitation. Dr. H. refers to an earlier case, occurring in another place, in which abusive treatment was alleged, and in which he testified before a magistrate. Being then unaware of this peculiar fragility, he confesses that he had believed the allegation of violence. Referring to his own cases, he says that he now only wonders how any of them escaped fracture.

The same journal reprints from *St. Bartholomew's Hospital Reports* an article by Dr. Ormerod, entitled "Observations on a Peculiar Condition of the Bones of two Insane Patients who had Fractured Ribs." One case was that of a woman of fifty-eight, "but looking seventy," "with restless rather than violent mania." She had been confined in a padded room. Her fractures were known before death, and attributed to muscular action. The broken ends of the ribs were "loose, and bathed in pus." The time of fracture is not stated, though impliedly not more than two weeks before death. The other patient was a man of forty-six, a demented general paralytic. Fracture of one rib was discovered two days before death. In this case, the femur, clavicle, and two unbroken ribs were examined. In both, all the ribs were apparently fragile and deficient in earthy matter. All the examined bones are reported "unusually advanced in decomposition," "dark, singularly wet and greasy." Upon keeping, instead of bleaching and hardening, as did some other bones, they became more and more "dark, rotten, and very offensive." The sections of diseased ribs showed increased size, as if from an effort of nature to strengthen them by new matter upon the outside. Forming bone-cells could be seen in the sub-periosteal laminae. The medullary structure was much frailer and more open than natural. Great difficulty was met in making thin sections of the denser, outer portions, for the microscope. The sections repeatedly crumbled and broke down. When one was at last obtained of the usual thickness, it was loaded with fat, and perfectly opaque. Removing the oil, it was granular, and required further thinning. "The Haversian systems were comparatively small." "Here and there it seemed as though one or two of the systems had dropped out, leaving large holes, bounded by septa of osseous tissue, not more than two or three laminae in width." The most remarkable peculiarity, he adds, was the large size of the central aperture, or Haversian canal. This was filled with opaque matter and oil-globules.

The author very sensibly cautions us not too hastily to assume that insanity is the cause of the bone-disease. He also makes the just observation that an equal degree of fragility in the bones of sane and of insane patients would be likely to cause quite different results. For the former would lie quietly in bed, or move about with great caution; while the latter might give way to the most excited and violent actions, or at least would exercise no special care in their movements. This probably is the reason why, often, our first intimation of the existence of such disease in the insane is the discovery of a fractured bone.

This disease seems much more common in patients past middle age. If found in a younger person, it is generally accompanied by a low degree of vital power. The chronic insane, the old or prematurely old, the demented, paralytic, or cachectic, furnish the vast majority of cases. That degenerative disease of the bones is much more frequent among the insane than among the sane, seems certain; the reason is yet to be found.

The conduct of Dr. Williams, the hospital physician in whose charge the two patients were, whose cases are described by Dr. Ormerod, was extremely bold and manly. Instead of hustling his patients, ribs and all, into hasty graves, he came forward and demanded the fullest investigation. The extraordinary fragility of bony structure described above, as found by a disinterested and

scientific observer, formed for him a vindication as triumphant and as richly merited as it must have been sweet and grateful.

An article contributed by PATRICK NICOL, M.A., M.B., upon "*Progressive Locomotor Ataxy and some other Forms of Locomotor Deficiency as found in the Insane*," is valuable rather for its suggestions than for its conclusions. Five cases are given of pretty well marked locomotor ataxy occurring in the insane. In all, the mental symptoms were those usually found in general paralysis. A few cases given under the latter division of his title, suggest inquiry into the relations of chorea and ataxy. The former cases, of course, suggest the inquiry into the resemblances, differences, and relations of the two diseases—paresis and locomotor ataxy.

An essay on the "*Artificial Feeding of the Insane*," by WILLIAM LAWRENCE, M.B., is generally judicious. He, however, neglects to refer to the need of discrimination between cases where food is refused from natural instincts, and from insane delusions or other morbid, mental, or moral causes. Of course, even an insane man may refuse food from the same reasons that actuate one perfectly sane. To force the stomach-pump upon such an one would be cruelty. The loathing of food, the impossibility of swallowing it, must be here taken as nature's refusal to carry on nutrition through the stomach. In cases where we are in doubt whether the refusal of food be natural or morbid, it is probably best to feed once, and then be governed by the effects. The general rule in the case of insane patients should be: Feed the victim of *acute* mania, melancholia, or dementia; and feed him early, before irreparable degeneration has taken place, for lack of nourishment; for insanity is, almost invariably, a disease of debility, and requires the promptest and fullest support. In a chronic case, or one of some little duration, and in which there is evident general or local disease apart from the brain, be more deliberate. If, in a case where we were in doubt, we find that the patient holds his own or improves under artificial feeding, it should be continued. Many a person, well and happy to-day, owes life and health to the early and persistent use of the feeding-tube.

As to the manner of feeding, we will take the liberty to make the suggestions which have occurred to us in practice: The patient is confined in a chair, so that very little movement can occur except of the head. An assistant's hands on the forehead press the head firmly back against the chair, and hold it fast. The mouth should be opened by a wooden wedge. Often, steady pressure on the chin, kept up for a minute or two, will momentarily overcome muscular resistance and permit insertion of the wedge. If not, it must be worked in flatwise between the upper and lower teeth and turned up on edge, and in the intervals of diminished resistance, carried well back to one side between the molars. This, if the wedge is wide enough—somewhat over an inch and a quarter—gives a wide-open mouth and an unobstructed view of the pharynx. The light should be in front, and sufficient to illumine the mouth. Let the tube be long, and as large as the little finger. Pass it back till it touches the posterior wall of the pharynx; then by further pressure, and a little arching up of the portion in the mouth, it will glide down into the entrance to the œsophagus. Here it often meets some resistance. But, if it has been *seen* to glide down the posterior boundary of the pharynx, no anxiety need be felt. With a little steady pressure it passes through the place of stricture, and thence easily into the stomach. A small and short tube is much less safe. If, after introducing any tube, persistent and suffocative cough occur, it should be withdrawn for a few moments. Food should not be injected till respiration has become free. Of course, any more than momentary passage of air or gas through the tube should lead to its withdrawal.

Dr. Lawrence mentions Dr. Skae as the suggester of the plan of overcoming the obstinacy of a non-eating patient by making him partly drunk with chloroform. When this idea occurred to Dr. Skae, we do not know; but the plan has for years been resorted to in this country, with ether, and often successfully. Under the pleasurable excitement, the patient forgets his fears of poison, or feels his heroic resolution to resist the natural cravings rapidly give way to the temptation set before him.

Mr. HENRY SUTHERLAND contributes an essay on "*Arachnoid Cysts*," which, when found in the insane, are, he thinks, generally associated with some debilitated condition of the blood or nervous system, and are formed by some change taking place in extravasated blood, and are not due to either a splitting up of the dura mater and separation of its arachnoid, or to the organization of lymph poured out during a former arachnitis.

"*Phthisis and Insanity*," by Mr. NICOL, author of the article on ataxy, and W. WATSON DOVE, L.R.C.P.E., Assistant Medical Officer, Somerset County Asylum, is mainly composed of arguments against the theory of Dr. Clouston that scrofula or tubercle is the principal cause of insanity. For this idea, it seems to us, there is no real ground. An indisputable fact is that the old chronic cases in insane asylums very frequently, we had almost said generally, die from some destructive disease of the lungs. The nice, and probably well-founded, distinctions recently made by Niemeyer between lesions due to tubercles and to other morbid processes, have not been made in the past records of insane asylums. All physicians ever connected with hospitals for the insane, have noticed, not only the frequency of "consumption" as a close to the life-drama, but also and particularly the remarkable latency of the disease. It often runs its course in the chronic, maniacal, or demented patient with scarcely any manifestation of its presence. There is no cough, no expectoration, no sign of suffering, no complaint. The patient is up and about, or lying and lounging around in his usual way, till death, or very shortly before. Often no dyspnea is noticed, or not till the last day or two of life. Appetite and digestion often continue good. If the physician be familiar with the peculiar course taken by the disease in the insane, his attention may be excited by the emaciation; but if he do not see his patient stripped, even this may escape notice. The pulse, if noticed, may give some indication by feebleness and frequency, though not always very decided. Night-sweats, if they occur, may be unreported, through the attendant confounding their effects with that from incontinence of urine. As to swelling of the feet, that may be caused in any indolent, sluggish, and apathetic patient by standing long in one position. All this we mention to account for the otherwise extraordinary frequency with which consumption is overlooked in the chronic insane. As combating the view of Dr. Clouston, we may express a belief that phthisis is not a frequent complication of acute insanity.

This article is sensible and judicious, especially in its discussion of the influences of asylum life, as promoting or preventing phthisis.

The article by Dr. MAYHEW, on "*Acute Delirious Melancholia*," seems to us to be founded on a mistake. A certain well-marked class of cases, sudden, rapidly fatal or convalescent, resembling, to some extent, the delirium of fever, has been by some writers, including Dr. Blandford, named acute delirious mania. The present writer seems to have got the idea that mania is necessarily lively, gay, and expansive. Hence he thinks former writers overlooked or failed to distinguish those cases where the delirium is of a low, anxious, distressful type. This is not so. There is no doubt whatever as to the class of cases that Dr. Mayhew had in mind. In the earliest published description of

this disease, Dr. L. V. Bell speaks of the delirium as resembling that of low fever, with suspicion and distressful delusions. As to diagnosis, he deems it most liable to be confounded with advanced typhoid, and with delirium tremens. Surely there is nothing cheerful about these diseases. Again, Dr. Ranney, of Blackwell's Island, speaks of the patients as "stupid," "dull," "moaning day and night." He also mentions the resemblance to delirium tremens, and to ship fever. Dr. Williams, of New York, gives an account essentially identical.

The kind of cases that Dr. Mayhew describes and intends to designate by the title of his article, exists, and has been described and known as "Bell's Disease," "Typho-mania," and "Acute Delirious Mania." But we doubt whether there do exist such cases as he imagines to have been described by others. That is, we doubt whether, in these sudden and terrible attacks, tending to prostration and death, there ever is found a bright and cheerful delirium. Where this sort of delirium occurs, the case is probably ordinary, acute mania.

Mr. Mayhew justly insists on the importance of sustaining the strength in these cases by artificial feeding, if, as is common, food is refused.

MR. FOX, in a brief article on "*Ergot of Rye in the Treatment of Mental Diseases*," confirms the views of its action which we have seen advanced by other writers in this volume.

Some of the articles in this interesting collection we would much like to speak of more particularly. But the already too great length of this notice forbids it.

B. L. R.

ART. XXVI.—*Transactions of the American Otological Society*. Fourth Annual Meeting. 8vo. pp. 75. Boston: Mudge & Son, 1871.

THE first paper read before the Society was the Report on the Progress of Otology, by Dr. A. H. Buck, of New York, in which the author calls attention to the gratifying fact that of late the English and Americans have not left the Germans all the work to do in this field, as a fair proportion of the contributions of the last year have emanated from English and American sources.

Some valuable investigations into the minute anatomy of the ear have been made. Among them,

"Rüdinger and Eyssel have determined, by their investigations, the mode of attachment of the base of the stirrup to the oval window. Both agree in the statement that the base of the stirrup is covered by a layer of cartilage, and that the band which binds it to the surrounding margin of the oval window is composed of fibrous tissue, rich in elastic elements, whose fibres run directly across the space separating the edge of the stirrup from the margin of the window."

It is really an important advance that two authorities have been, at last, brought to agree upon this vexed point in the minute anatomy of the ear, but we are by no means confident yet that their description will be generally accepted as a demonstrated fact, and the subject set at rest.

Kölliker said that the articulations and ligaments of the small bones of the ear "resemble in miniature those of other similar organs, in all respects, even down to the cartilaginous layer." Toynbee believed there was a perfect articulation between the stapes and the fenestra ovalis, but could not detect any cartilage on the surface of the base of the stapes. He described the stapedio-

vestibular articulation as formed by the "circumference of the base of the stapes applied against the inner surface of the fenestra ovalis," and succeeded in finding cartilage on the edge of the base. With characteristic minuteness, he described five different forms of "anchoylosis of the stapes to the fenestra ovalis." Tröltsch denies that it can be a true joint, principally because the base of the stapes does not fill the fenestra ovalis, but is connected with it by a membranous ring, called the annular ligament. He says that "Voltolini has recently shown that no true articulation really exists," and "where there is no articulation there can be no anchylosis." Also, that "recent German anatomists do not accept either a layer of cartilage at the base of the stapes, or an articular capsule; while Magnus says that the surface of the base of the stapes, as well as the walls of the canal of the foramen ovalis, has a layer of cartilage. Magnus also believes that the base of the stapes is by no means smaller than the surface of the fenestra ovalis, and that the latter is therefore completely filled up."

This will give some idea of the great diversity of opinion that has prevailed on this subject.

The familiar fact that persons suffering with diseases of the ear can hear certain sounds more distinctly than others, has been made the subject of investigation by Oskar Wolf. An attempt has been made "to analyze and define more precisely the elementary nature of the different sounds of human speech," and "to characterize the peculiarities that belong to an abnormal ear," but no definite conclusions of a practical nature seem to have been reached. A new and perhaps important field of study; however, has been opened.

The question of othæmatoma, hæmatoma auris, or hæmatocele of the auricle, has received renewed attention. Hun still considers it idiopathic, depending upon a pathological condition of the brain; while Guddon, Ludwig Meyer, and Nichol "come to the conclusion which Virchow expresses so clearly in his work on tumours," that "it is not one of the pathological lesions of insanity, but that the surroundings of the insane, and the debilitated condition which so frequently accompanies insanity, are the real reasons for its frequent occurrence among that class of the community." Some have gone so far as to say that it is chiefly of traumatic origin, and that the less frequent occurrence of what used to be called the "asylum ear" is a comment upon the humane changes that have been made of late years in the treatment of the insane.

A remarkable case has been recorded by Dr. Green, of restoration of the membrana tympani, after its almost complete destruction by chronic inflammation. (*Boston Med. and Surg. Journ.*, Nov. 24, 1870.) A similar case is reported in the present number of the Transactions, by Dr. H. N. Spencer, of St. Louis. A very good answer to the question not unfrequently asked, whether perforations of the membrane ever heal.

The use of absolute alcohol in obstinate cases of purulent catarrh has been revived by Weber, of Berlin. Experience with this remedy at the New York Eye and Ear Infirmary has not been very satisfactory.

Several plans of treating chronic purulent catarrh of the tympanum, with destruction or perforation of the membrane, have been recommended, the efficacy of which depends upon a thorough cleansing of the middle ear, and the application of medicated fluids to all parts of the cavity. Lucæ used an apparatus consisting of two tubes fixed in a perforated rubber cork, which was fitted tightly in the external meatus. The fluid was forced into the tympanum through one tube, and out through the other. Van Milligan, by means of the catheter, forced the fluid through the Eustachian tube, and out by the meatus. Hinton (*Guy's Hosp. Reports*, vol. xvi., 1870-71) has introduced the plan of

passing a continuous stream by the external meatus through the tympanum, and out by the Eustachian tube and nostril. All that is needed is a syringe with a nozzle that will fit air-tight in the external meatus. We have used this plan in a number of cases at the Children's Hospital of Philadelphia, and with very satisfactory results. It has once or twice caused considerable headache and dizziness, but no permanent unpleasant effects. It seems, however, a remedy which should be used with some caution.

Four new cases have been reported during the year, in which the mastoid process was trephined, with excellent results. It is a question whether this operation might not be performed with advantage more frequently than it is.

Prof. Weber has cured a very obstinate and annoying case of tinnitus, in which inflation of the tympanum, and excision of part of the membrane, had no effect, by division of the tendon of the tensor tympani muscle.

Dr. Pardee, of New York, contributes a short article on "The Treatment of Chronic Purulent Aural Catarrh, as indicated by the Secretion." He says that "in the secretion we have a valuable, and indeed a most reliable, indication for treatment. . . . The secretion of mucus seems to be a characteristic symptom of the inflammatory state of the disease, or of a hyperæmic condition of the membrane which lines the middle ear. . . . The disease may go on to the development of excessive free cell-formation, and the secretion then is purulent." When, in a chronic case, mucus takes the place of pus in the discharge, the supervention of a hyperæmic condition is indicated. In this stage, a strong solution (forty grains to the ounce) of nitrate of silver is recommended. Where the discharge is purulent, weak astringents, as alum, zinc, or lead (two to four grains to the ounce), are thought most efficient.

Dr. O. D. Pomeroy, of New York, gives the result of "the examination of sixty lunatics at the Blackwell's Island Lunatic Asylum, thirty of whom had hallucinations of hearing, and thirty had none; with the view of determining whether disease of the ear had any agency in the production of the symptom." In the words of Tröltzsch, "it is a very important question whether the aural hallucinations occurring in insane patients do not frequently depend on peripheric tinnitus, which is exaggerated by the patients." Cases have been recorded in which this symptom was relieved by local treatment. Dr. Pomeroy has tabulated the two classes of patients with reference to the condition of their ears, and finds that "there is no striking difference between the cases having hallucinations and those not having them," though "the result of the examination is a little in favour of the hallucination cases, being oftener associated with ear disease. The proportion is not, however, anything like that previously quoted from Tröltzsch and others, . . . certainly the aural disease did not, in a single instance, develop or excite the insanity."

Dr. Pomeroy also contributes a paper entitled "A Record of Two Hundred and Eighty-seven Inflations of the Tympanic Cavity, with a View of determining the Frequency with which the Drum Membrane is Reddened." He says:—

"Inasmuch as it is frequently stated in books on diseases of the ear, that inflation of the tympanic cavity generally causes reddening of the membrane of the drum, and, therefore, is of considerable value in determining whether the cavity has been entered or not, it was thought proper to institute the following investigations, in order to test the correctness of the proposition."

"The writer had long been of the opinion that the frequency with which the membrane was congested by the inflation was much overrated," and that false conclusions might be arrived at in consequence; and his investigations fully confirmed this opinion. The membrane was found to be reddened in less than one-third of the number of inflations.

When we add to this the possibility of the membrane being reddened by unsuccessful efforts at inflation, especially if the Valsalvian method be relied on, it is clear that this test is very far from being a trustworthy guide.

Dr. J. Orne Green, of Boston, reports "Five Cases of Fatal Otorrhœa, with Remarks on the Course by which such Cases lead to Death."

A full history is given of each case, with a careful record of the post-mortem examination, and, in the remarks, the author calls attention very forcibly to the great danger of fatal complications in this disease, a danger that is too often lost sight of by medical men as well as by patients. To impress this lesson, it is only necessary to give the facts of the case in the author's words:—

"The meatus internus gives a large canal from the cavity of the skull to the labyrinth of the ear, and this latter is only separated from the tympanum by the thin membranes covering the fenestræ ovalis and rotunda. This large passage is lined by a prolongation of the dura mater, which serves as its perosteum. The aquæductus vestibuli also connects the interior of the skull with the cavity of the labyrinth, and serves for the passage of a small vein.

"The petrosal mastoid canal leads from the mastoid cells to the interior of the skull, thus furnishing still another communication from a different part of the tympanum to the brain. It serves for the passage of a vein which has been followed into the superior petrosal sinus, so that we have here the circulation of the tympanum in direct communication with that of the meninges of the brain.

"All of the serious otorrhœas consist essentially of the purulent inflammation of the mucous membrane lining the tympanum, with a marked tendency to ulceration. This ulceration may, and usually does, destroy the membrana tympani, making the meatus and tympanum one cavity, and it may destroy either or both the membranes of the fenestra leading to the labyrinth, thus exposing that cavity. The ulceration is liable to attack the bone, causing absorption; and we have seen that but a very thin osseous plate separates the tympanum from the carotid canal, the jugular vein, the transverse sinus, and the facial nerve, and these bony plates, even in their normal condition, are perforated by foramina."

When we remember these close relations to vital parts, the wonder seems to be, not that diseases of the ear occasionally end in death, but that the percentage of mortality is not very much larger.

The Transactions also include a number of interesting reports of cases, which we have not space to notice, but all of which will repay perusal by those interested in the subject.

G. C. H.

ART. XXVII.—*Transactions of American State Medical Societies.*

1. *Transactions of the Indiana State Medical Society, 1871. Twenty-first Annual Session.* 8vo. pp. 220.
2. *Transactions of the Medical Association of the State of Alabama. Annual Session of 1871, held in Mobile, March 21, 23.* 8vo. pp. 356.

1. THE Address of the President, Dr. R. N. TODD, at the opening of the Twenty-first Annual Session of the *Indiana State Medical Society*, held at Indianapolis, June 20, 1871, had for its theme, The Relation which the Medical Profession sustains to the Administration of Justice. It is very clearly shown that such relation embraces the duty, on the part of the well-instructed physician, to assist the courts, civil and criminal, in the administration of their solemn

and responsible duties. In the conclusion of his address, Dr. TODD urged upon his audience the necessity of every physician so preparing himself as to become a safe counsellor when called upon to give testimony as a professional expert.

The next paper, by Dr. T. PARVIN, on "Placental Extraction and Placental Expression," presents a very full history of the treatment recommended by obstetricians up to our own time, of retained placenta after abortion or delivery of the child at the full period. In cases of abortion, where the placenta is not readily expelled, Dr. P. considers that the dependence of the physician should be upon extraction with one or two fingers. "It is here," he remarks, "a *vis a fronte*, not a *vis a tergo*, which must be invoked to obviate placental retention."

To secure the discharge of the placenta after childbirth, Dr. P. endeavours to prove the efficacy of "placental expression." This was first made public by Professor Cr  d  , of Leipsic, in 1853, and known by his name—a method, the adoption of which he urges in all cases of labour. Cr  d  's method is simple in principle and easy of execution. "Its object being to reinforce the uterine contractions, the accoucheur should act during a pain, and not in the interval; success is the more rapid, the sooner after the expulsion of the f  etus this effort is made; nevertheless, it may succeed a quarter of an hour or even half an hour after, but delay presents an unfavourable condition.

"When the retraction of the uterus has attained its maximum in the first contraction which normally occurs after the escape of the infant, embrace the fundus and the superior part of the anterior wall of the uterus, with the entire right hand placed transversely. Then press downward and backward, assisting, if necessary, with the left hand. Under this pressure the placenta and membranes are detached, then engorge in the uterine orifice; sometimes even escape suddenly from the vagina, just as a cherry-stone escapes when the cherry is pressed between the finger and thumb."

In favour of Cr  d  's method as the rule in all cases of parturition, there is adduced the experience of a number of observers and of statistics worthy of all confidence. "Cr  d  , Clarke, Spiegelberg, and Mayer assert that they have had no cases of hemorrhage since they have pursued this practice exclusively. In a discussion in the London Obstetrical Society, November, 1869, Dr. Playfair remarked, 'If the greatest care were taken to follow down the contracting uterus with the hand, to keep up firm and strong pressure so as to squeeze off the placenta, any amount of hemorrhage would be of the rarest possible occurrence.' Retention of placenta, according to Devilliers, occurs once in two hundred deliveries. Dr. Ramsbotham's statistics of the Royal Maternity Charity give the proportion of one in 182.82, but Dr. Chantreuil, in 540 deliveries, pursuing the method of Cr  d  , did not have a single case of placental retention. Another argument in favour of this practice is the brief term required for the completion of the final stage of labour. Of the 540 deliveries just referred to, in more than one-half the placenta was expelled within three minutes, in only one case was there a delay beyond thirty minutes." In conclusion, it seems to Dr. P. that the practice of "placental expression" rests upon a firm basis, both of reason and experience, and is eminently worthy of general adoption by the profession.

The next two papers are on the same subject and cover pretty much the same ground. The one is on "An  sthetics in Midwifery," by Dr. DOUGAN CLARK; the other is "A Plea for An  sthetics in Midwifery," by Dr. L. P. YANDELL. The general practical principles inculcated in both these are pretty fairly expressed by the summary drawn up by Dr. Clark, as follows:—

"1. In perfectly normal labours of moderate suffering and duration, and without untoward symptoms of any kind, an  sthetics should not be resorted to.

"2. If the pains even in an otherwise normal labour be inordinate or protracted, especially in the second stage, anæsthesia is indicated.

"3. Irregular pains, exhaustive in their character and inefficient, may be tranquillized by anæsthesia, and afterwards the action of the uterus is, as a rule, more regular and efficient.

"4. Threatened convulsions may be averted, and those existing may be terminated, by a judicious use of anæsthetics. In cases of eclampsia, however, with congestion of the brain, or organic disease of that organ from any source, they are contra-indicated.

"5. Anæsthesia is proper in all obstetrical operations, whether manual or instrumental. It is useful in eversion, embryotomy, and the use of the forceps, and indispensable in Cæsarean section.

"6. Anæsthetics are among the most reliable means of overcoming rigidity of the perineum, os uteri, or vagina, especially when depending upon muscular excitement.

"7. Chloroform or ether may be employed for anæsthesia, of which chloroform is the most convenient, agreeable, and efficient, but ether in midwifery, as in surgery, is the most safe.

"8. Chloroform is much less dangerous in midwifery than in surgery, so far as past experience can determine.

"9. It is not necessary, as a rule, to bring about complete insensibility, but only sufficient to obtund the severity of the pains. The exceptions to this rule will readily suggest themselves to a thinking mind."

The next paper presents a very able *exposé* of the present state of our knowledge as to the efficacy of "Chloroform and Chloral in the Treatment of Puerperal Convulsions," by Dr. WILSON HOBBS. It presents nothing new in respect to the subject, but is well adapted to call the attention of practitioners to the fact that chloral may replace in many instances the use of chloroform as an anæsthetic, it being employed with greater ease, and at intervals, its effects being more persistent. It is in cases of puerperal convulsions, especially, that it demands a fair trial.

The discussion which ensued in respect to the teachings of the three last noticed papers is replete with interest and practical suggestion; it will not, however, admit of profitable condensation adapted to our limits.

A very valuable "Report on the Prevailing Diseases of the Seventh Congressional District" of Indiana, composed of the counties of Clinton, Carroll, Tippecanoe, Benton, Warren, Fountain, Montgomery, and Boone, follows. Its contents are worthy of record, but are more immediately and directly of local than of general interest.

A short paper by Dr. C. E. WRIGHT succeeds, on "Paralysis of Accommodation of the Eye." The author, in illustration of this affection, relates the case of a female, aged thirteen years, who had received a blow upon the right cheek, just below the rim of the orbit, from a stone thrown by a boy.

Dr. LOMAX, with much good sense and truthfulness, enforces the "Responsibilities of Physicians, and the Objects and Duties of the Indiana State Medical Society." The paper will admit of no satisfactory analysis.

The paper next in order is on the "Prevention and Treatment of Laceration of the Perineum," by Dr. T. B. HARVEY. This is a very able paper, especially that portion which treats of the mode best adapted to heal the laceration.

The plan pursued by Dr. H. is in its main features that of Dr. Emmet, of New York. The ruptured surfaces on both sides are pared carefully with the knife, placed in exact juxtaposition, and kept so by the use of silver wire sutures.

Dr. V. KERSEY relates a very interesting case of "Muscular Atrophy," occurring in a gentleman forty years of age, brought on, apparently, by great

muscular exertion, and protracted exposure to cold; terminating fatally, seven months and five days after the exposure, and six months after the probable access of atrophy.

The subjects of the next two papers are, the "Nature and Cure of Disease," and the "Influence in Disease of the Nervous System;" the first by Dr. G. N. DUZAN, the second by Dr. R. E. HAUGHTON. Though both these papers are somewhat hypothetical in character, they nevertheless present some views that are particularly suggestive.

Dr. W. J. ELSTON discusses in a short paper the therapeutic value of "Bromide of Potassium" as a hypnotic in the sleepless insane; also in cases of mania, in so-called nervous headaches, in epilepsy, and epileptic insanity. He considers the remedy, in the several forms of epilepsy, to exert a very beneficial palliative influence, but denies its curative power.

The next paper is on "Self-Pollution in Children," by Dr. H. P. AYRES. The dreadful effects of this detestable, easily acquired vice, the dominion of which is increased by indulgence, upon the health and vigour of the physical, moral, and intellectual well-being of those addicted to it, throughout life, are well depicted by Dr. A. Some of its causes are correctly referred to, as well as the general outline of the course to be pursued for its prevention and arrest. We cannot be permitted to occupy the space it would require to present a proper analysis of the paper.

An instructive article on "Exophthalmic Goitre" is communicated by Dr. G. W. H. KEMPER, but contains nothing new in respect either to the diagnosis of the disease, its course and duration, pathology, or treatment.

The paper by Dr. THAD. M. STEVENS is replete throughout with good sense, and enunciates truths important as well to the public at large as to those in whose hands is committed the administration of criminal justice, and who, while they protect those who "by reason of insanity" are not responsible for what crimes they may commit, and hence should not be held as proper subjects for judicial punishment, should at the same time bear in mind that they are bound to direct the means, and see these carried faithfully into execution, by which society may be fully protected from the violence or homicidal propensities of those "acquitted of crime because insane."

Dr. JAMES F. HIBBERT's paper on the "Progress of Medicine" treats the subject in a pleasant, common-sense manner, but presents no prominent points calling for special comment.

The "Transactions" close with a "Biographical Sketch of John S. Bobbs, M.D.," by G. W. MEARS, M.D.

2. The Annual Session of the *Medical Association of the State of Alabama*, for 1871, was opened at Mobile, March 22, by an Address from the President, Dr. F. A. ROSS. It comprises a brief history of the Association, and an ardent appeal to the physicians of the State, urging upon them the duty of lending their aid to sustain the Association, and to increase and extend its influence over the entire profession of Alabama.

Following the President's address is the "Annual Oration," by Dr. WM. H. ANDERSON, which is quite an able and polished production.

The remainder of the volume is occupied with "Reports on the Diseases and the Surgery of the different Counties of Alabama." These reports, which, upon the whole, are well drawn up, furnish valuable materials for the study of the etiology of disease, and the influence exercised upon its character by the climate, the soil, the condition of the country, the character of its watercourses, together with the extent, character, habits, and occupations of its inhabitants.

To a careful study of these, those who desire to avail themselves of the valuable materials they furnish must resort; any analysis of them, to be useful to our readers, would extend this article far beyond reasonable limits.

D. F. C.

ART. XXVIII.—*Fistula, Hæmorrhoids, Painful Ulcer, Stricture, Prolapsus, and other Diseases of the Rectum, their Diagnosis and Treatment.* By WILLIAM ALLINGHAM, F.R.C.S., Surgeon to St. Mark's Hospital for Fistula, etc. 8vo. pp. xii., 239. London: J. & A. Churchill, 1871.

MR. ALLINGHAM is favourably known to American surgeons as a zealous worker in the special branch of medical science to which he has devoted himself, through various contributions to periodical literature, and particularly through an admirable paper upon Lumbar Colotomy, which appeared in the first volume of the recently revived *St. Thomas's Hospital Reports*, and which was noticed in the number of this Journal for April, 1871 (p. 525). In the preface to the neat volume which he now offers to the world, Mr. Allingham gives as a reason for the publication of his book, that he has had for years unusual opportunities for observing diseases of the rectum, and that he feels that he should not have usefully occupied his position, did he fail to make known his experience for the benefit of others. In his list of "very good" books already written upon diseases of the rectum, we observe with satisfaction that a prominent position is assigned to the well-known works of the late Dr. Bushe, and Dr. Van Buren, of New York; and are, we confess, somewhat surprised to find conspicuous by their absence the names of several modern English books, which we have always looked upon as very meritorious productions. Mr. Allingham disarms his critics at the outset by declaring his consciousness that his "composition is rough, and often tautological, and that he is unable to write elegant English." Hence we shall have nothing to say about the literary character of his work, but shall merely invite attention to a few points in which the practice recommended differs from that advised by other authorities, and indicate certain particulars in which it seems to us the author would do well to amend his work, should future editions be called for.

The first point in which we find the author radically differing from almost every surgical writer of modern times, is in declaring that, in the treatment of fistula in ano, it is not sufficient to divide the sphincter, and unite by incision the internal and external openings of the fistula. "In the great majority of cases," he says, "you will not cure your patient unless you lay the whole sinus open from end to end. Over and over again I have left the sinus above the internal opening uninterfered with, and almost invariably have had to regret it, and perform a second operation." This laying "the whole sinus open from end to end," seems to us, we confess, a somewhat heroic procedure, and, although Mr. Allingham assures us that "it constantly occurs to me at St. Mark's to have cases which have been operated upon at other hospitals, and the upper part of the sinus left, and the patient is not cured," we cannot but think it more likely that the author deceives himself as to the frequency with which the limited incision fails in the hands of others, than that the host of surgeons, both general and special, who employ no other mode of treatment, are all persistently engaged in disappointing their patients and injuring their own reputations.

Another peculiarity in Mr. Allingham's treatment of fistula is thus described: "In old-standing cases, where there is much induration, it is very good practice to draw a straight knife through the dense track of the fistula, and outwards beyond the external opening. It is wonderful, after this, how rapidly quite cartilaginous hardness passes away." This incision, which the author tells us was commonly practised by the late Mr. Salmon, who called it "his 'back cut,'" is doubtless efficient, but, we imagine, not more so than the safer plan which we, in common with many other surgeons, have been in the habit of employing, of wiping out the track of the fistula with the tincture of iodine, caustic potassa, or even the solid stick of nitrate of silver, so as to make a superficial slough and expedite the healing process.

With regard to operations for fistula in phthisical patients, Mr. Allingham judiciously advises that, if the lung affection be not far advanced, nor rapidly progressing, and if the rectal disease be the source of great annoyance, an operation may properly be performed, care being taken to secure for the patient good hygienic surroundings during the after-treatment.

In dealing with *internal piles*, Mr. Allingham prefers the ligature to any other mode of treatment, but expressly declares that, in expressing this preference, he refers to the operation as employed at St. Mark's Hospital, "after the manner devised by the late Mr. Salmon, and practised at that institution for more than thirty-five years, . . . and not to the usual method of applying the ligature, by transfixion of the base of the pile, and tying it in halves." Here again we must own that we are disposed to think "the usual method" quite as efficient as, and rather safer than that practised "at St. Mark's." We have never ourselves known any serious bleeding to occur after the transfixion mode of tying piles, and believe that hemorrhage is, under these circumstances, much rarer than is supposed by Mr. Allingham, who, indeed, confesses that, after his own mode of operating, though he has never lost a patient by hemorrhage, he has seen persons in considerable danger. Mr. A. judiciously advises that, should secondary bleeding occur after an operation for piles, the rectum should be at once plugged, as there is commonly no time to be lost in efforts to find the bleeding vessel. The following are the author's directions for plugging the rectum:—

"When called to [a] case of hemorrhage, always arm yourself with a full-sized, bell-shaped sponge, and plenty of cotton wadding. Take also some persulphate of iron, or, if you have not that, powdered alum. Thread a strong silk ligature through, near the apex of your cone-shaped sponge, and bring it back again, so that the apex of the sponge is held in a loop of the thread. Then wet the sponge, squeeze it dry, and powder it well, filling up the lacunæ with the iron or alum. Pass the forefinger of your left hand into the bowel, and, upon that as a guide, push up the sponge—apex first—by means of a metal rod, bougie, penholder, or a rounded piece of wood, if you can get nothing better. Now, this sponge should be carried up the bowel at least five inches, the double thread hanging outside the anus. When this is so placed, fill up the whole of rectum below the sponge thoroughly and carefully with cotton-wool well powdered with the alum or iron. When you have completely stuffed the bowel, take hold of the silk ligature attached to the sponge, and, while with one hand you pull *down* the sponge, with the other hand push *up* the wool. This joint action will spread out the bell-shaped sponge, like opening an umbrella, and bring the wool compactly together. . . . This plug should remain in at least a week, and it may be retained a fortnight or more."

This mode of plugging the rectum does not, the author says, cause nearly as much pain and tenesmus as might be expected, and, by the free use of opium, the patient's condition can be made very comfortable. To permit the

escape of flatus, a flexible catheter may be fixed in the centre or at one side of the plug.

In his mode of treating *fissure*, or *painful ulcer of the rectum*, we again find that Mr. Allingham differs from most modern authorities. Thus, while he believes that a great many cases can be cured without any operation, he maintains that, when an operation is required, it is commonly not sufficient to merely divide the floor of the ulcer, and recommends "a fairly free incision," declaring "that it is much better to cut rather too deeply than too superficially."

For polypus of the rectum, Mr. Allingham recommends ligation, and for chronic ulceration of the rectum, rest and milk diet, with the local use of astringent injections or suppositories. "In the most advanced stages of ulceration and stricture, where there are several fistulæ, and the whole rectum disorganized, as it frequently is, nothing short of lumbar colotomy offers to the patient any chance of life." By diverting the course of the feces, the ulcerated surface is given a chance to heal, and a plastic operation may subsequently be undertaken so as, if possible, to close the lumbar opening.

Mr. Allingham's remarks upon *simple stricture* of the rectum are practical and judicious, but do not call for special comment. For *proclentia*, or *prolapsus of the rectum*, the application of strong nitric acid to the whole protrusion is recommended, the part being then oiled and returned, the rectum plugged with wool, and the plug kept in place with a firm pad, adhesive strips, and bandage. The bowels should be locked up with opium for four days, and a dose of castor oil then administered to bring away the plug. This mode of treatment Mr. Allingham has never known to fail (in children), when properly carried out, and the result is a permanent cure. In adults the same plan may be employed, but in them the benefit will only be temporary.

Pruritus ani, and *impaction of feces*, are considered in the following chapter, and then follows an account of *cancer of the rectum*, in which is essentially reproduced the author's description of the mode of performing colotomy, which appeared in the volume of *St. Thomas's Hospital Reports* already referred to. The remaining chapters are devoted to an account of an intractable form of ulceration of the anus, which Mr. Allingham calls "rodent ulcer" (rather unfortunately, we think, for he assures us it differs widely from the "rodent ulcer," or "Jacob's ulcer," of the face), and to certain "miscellaneous" affections, such as neuralgia and inflammation of the rectum, rectal gonorrhœa (of which the author has seen three undoubted cases, all occurring in prostitutes, who confessed the mode in which the affection was acquired), and vicarious menstruation from the rectum, of which he has likewise seen three cases.

Upon the whole, we regard Mr. Allingham's book as a very good one. Though we believe that he is wrong upon many, if not most, of those points in regard to which he differs from the majority of surgical writers, we acknowledge the value of his opinion, as that of one who has had very large experience; and it is impossible not to feel that he is perfectly sincere in all he says, and that he honestly believes himself to be right and all the rest of the world wrong.

In two points, which we will now indicate, we think the book might be altered with advantage, and without sacrificing in any degree its usefulness and its eminently practical character.

First, by the omission of the frequently recurring references to the ignorance of rectal diseases shown by general practitioners. After all, it is these same general practitioners who are probably expected to become purchasers of the book (for we cannot for an instant suppose that the author wishes his volume

to become a text-book for patients), and no good purpose is accomplished by so constantly reminding them of their deficiencies.

Secondly, by the omission or very material modification, in future editions, of the not very dignified and, as it seems to us, unnecessary diatribe against Mr. Henry Smith, contained in Chapter V. Whatever be the merits or demerits of the "clamp and cautery" treatment of piles, it would have been quite sufficient for Mr. Allingham (more especially as he was not writing a critical review of Mr. Smith's Lettsomian Lectures, but an independent monograph) to express his own views upon the subject, without accusing other gentlemen, whose professional standing is not inferior to his own, of making "extravagant and unreasonable statements," and "reckless assertions."

Except in these few particulars, in which it seems to us that Mr. Allingham's zeal has outrun his judgment, his book impresses us, as we have already said, very favourably, and we take pleasure in commending it to our readers as a valuable addition to the literature of rectal surgery. J. A., Jr.

ART. XXIX.—*Practical Lithotomy and Lithotripsy; or, An Inquiry into the Best Modes of Removing Stone from the Bladder.* By Sir HENRY THOMPSON, Surgeon Extraordinary to H. M. the King of the Belgians, Professor of Clinical Surgery, and Surgeon to University College Hospital. Second Edition, considerably enlarged. 8vo. pp. xvi, 327. London: J. & A. Churchill, 1871.

THE first edition of Sir Henry Thompson's now classical work appeared in 1863, and was very favourably noticed in the number of this Journal for January, 1864 (p. 224). During the seven or eight years which have passed since that time, the distinguished author has had unrivalled opportunities for studying calculous disorders and the best modes of dealing with them, and it is but simple justice to add, has apparently made the best use of those opportunities, so that, in its present form, his work may not only be regarded (as it was declared to be in the notice of the first edition, which has already been referred to) as "far superior to any other in the English language on the same subject," but as superior also to any similar work known to literature.

In the first portion of the volume, Sir Henry Thompson gives an account of the dimensions and surgical anatomy of the perineum, and of the various modes of extracting a stone from the bladder by a cutting operation. The lateral operation is first described, the bilateral, medio-bilateral, median, and other perineal operations being next considered, and finally the supra-pubic, or "high operation." Not only is each method accurately and fully described, but the several steps or stages of the operations are made the subjects of a running commentary, discussing impartially the diverse opinions held by various operators, while numerous intercalated wood-cuts (which are really illustrations, and not merely pictures) serve to bring out the meaning of the text much more clearly than could be done in any other manner.

Sir Henry Thompson does not recommend that the bladder should be injected before lithotomy, as is usually done in this country, believing "that it is sufficient to take the chance of the urine accumulating an hour before the operation," and quotes Cheselden and Crichton to the effect that, if the bladder is nearly empty, the stone will invariably be found at its neck. The staff, he advises, should be held "strictly in the median line," and "made to rest steadily

but lightly against the lower border of the symphysis pubis." In speaking of the first incision (in the lateral operation), the author alludes to the various points at which different operators recommend that it should be begun—Sir William Fergusson giving an inch and three-quarters as the proper distance from the anus for the knife to be applied, while most authorities give an inch and a half or an inch and a quarter, and Coulson and Keith of Aberdeen only an inch—and expresses the opinion that it is, upon the whole, safer "to err, if it be an error, by placing the incision too low rather than too high." To avoid the risk of wounding the rectum in so doing, however, the operator should not overlook "the necessity for commencing at a little greater distance from the raphé, when he enters the knife at an inch or inch and a quarter, instead of an inch and three-quarters, above the anus." For the deep incision, Sir Henry Thompson ordinarily employs the sharp-pointed knife, because, as he says, "there is a certain ease and simplicity in the use of a single knife, . . . and, unless there are some exceptional circumstances, it must be admitted to be both a safe and convenient instrument." If, however, the stone is very large, requiring the knife to leave the staff in order to make the deep incision sufficiently free, or if the perineum is very deep and the prostate very large, it may be better to complete the operation with the probe-pointed knife, and in the latter case to use the blunt gorget to aid the introduction of the forceps.

With regard to the *extent* of the prostatic incision, the author judiciously points out that there is danger in either too small or too large a wound:—

"From what I have seen," he says, "I am persuaded that insufficient internal incisions are equally dangerous with those which are too free, and that the tendency of the present day is towards the former extreme. . . . Danger is always great in a ratio proportioned to the size of the calculus, but this arises quite as much from the violence inflicted in removing it, as from the depth of the incisions employed."

At the same time, Sir Henry Thompson is by no means an advocate for unnecessarily free incisions, and properly insists upon the great dilatability of the neck of the bladder, a property which "is of the utmost value to the lithotomist," but to take advantage of which "the dilatation must be made slowly and gently."

"If there be any single proceeding in connection with the practice of lithotomy . . . which demands, more than any other, of care, attention, and self-command, I should say it is the manner in which we traverse with instruments the wound in the neck of the bladder. . . . I am strongly inclined to think that in many hands the forceps, and not the knife, is the most deadly instrument employed in lithotomy."

The chapters on the "causes of death following lithotomy," and on the "difficulties and dangers met with in lithotomy," are full of sound practical instruction, and will well repay careful study, but our limits will not permit us to dwell upon them, and we therefore pass on to Chapter VII. (which the preface tells us is a new one), on "the results of lithotomy." Some years ago, Sir Henry Thompson collected with great care the particulars of 1827 cases of lateral lithotomy, which had occurred in the hands of surgeons who had practised that operation to the exclusion of any other. Of these 1827 cases, 1028 were in persons under, and 799 in persons over, sixteen years of age, and the number of deaths in each category, respectively, 68 and 161. It may therefore be safely said that the mortality of lateral lithotomy is for children 6.61 per cent., and for adults, 20.15 per cent., or a little more than one in five. It would be obviously unfair to compare this mortality with that of lithotrity, for the latter operation is practised in the most favourable cases, while lithotomy is reserved (by surgeons who employ both methods) for those which promise the worst re-

sult; and there is the same difficulty in comparing the statistics of the lateral with those of the other cutting methods, for some of them, as the median, are only practised in cases of small calculus, while others, as the retro-vesical, supra-pubic, and, to a less extent, the bilateral operation, are habitually reserved for cases of unusually large stone.

The death-rate of lithotrity in adults, as shown by the records of Brodie, Fergusson, Keith (of Aberdeen), and Sir Henry Thompson himself (all referred to in the present volume), is 7.54 per cent., 41 deaths having occurred among 544 patients. Sir Henry's individual experience is still more favourable to the operation (204 cases and 13 deaths, or 6.37 per cent.), and, in view of the fact that he adopts lithotrity in *five-sixths* of all the cases of stone he meets with, shows that he must have brought the manual procedure to a very high point of perfection.

In order to estimate with approximate accuracy the advantages which have really been derived from the introduction of lithotrity as a substitute for lateral lithotomy, we should be able to place together statistics showing the mortality after the latter operation in the hands of those who practise no other, with the results of all cases occurring in the practice of those surgeons who employ both methods. The figures are wanting to enable us to do this on a large scale, but taking the record of Sir William Fergusson, as published in his *Lectures on the Progress of Anatomy and Surgery*, and that of Dr. Keith, as quoted in the volume before us, we find that 495 cases treated according to the judgment of the operators, either by cutting or crushing, gave in all 90 deaths, or a mortality of 18.18 per cent., and comparing this with the death-rate of lateral lithotomy in adults, as given above (20.15 per cent.), we may infer that by the adoption of lithotrity in suitable cases, an absolute saving of life is effected of about two per cent. This difference, though probably less than is commonly supposed by enthusiastic lithotritists, is, we think, sufficient to render it the surgeon's duty to employ lithotrity in every case in which it is not positively contra-indicated.

We must pass over the second portion of Sir Henry Thompson's book very briefly, though it is in some respects the most valuable part of the whole, and certainly gives a most satisfactory exposition of the science and art of lithotrity. Turning to the twelfth and thirteenth chapters, which we learn from the preface are new, we find in the former a consideration of various complications, which are ordinarily supposed to contra-indicate lithotrity, and in the latter a very fair estimate of the *results of lithotrity*, embracing an analysis of 204 consecutive cases¹ of the operation, which have occurred in the author's own practice. This chapter is essentially a reproduction of a paper read by the author before the Royal Medical and Chirurgical Society, and published in its *Transactions* (see notice at p. 177 of this No. of the Journal). The various forms of organic disease which are commonly supposed to contra-indicate lithotrity are enumerated by Sir Henry Thompson as (1) organic stricture of the urethra, (2) hypertrophy of the prostate, (3) atony and paralysis of the bladder, (4) a sacculated condition of that organ, (5) tumours of the bladder, and (6) disease of the kidney. That urethral stricture is not necessarily a contra-indication to lithotrity, is shown by three cases, the details of which are given in the present volume, in which the author succeeded by "continuous dilatation" in so far overcoming the contraction, as to permit the use of a small flat-bladed lithotrite, by which crushing was satisfactorily accomplished. Prostatic hypertrophy

¹ These cases are briefly reported in an appendix to the volume.

does not offer any very serious impediment to lithotripsy, though, if the enlargement be great, the lithotrite must be worked with the blades reversed, and the removal of fragments aided by washing out the bladder with Clover's or some similar apparatus. Artificial evacuation of fragments is also required in cases of vesical atony or paralysis. Sacculization of the bladder, if it could be recognized beforehand, would furnish ground for resorting to lithotomy instead of lithotripsy—though it forms a most serious complication of either operation—but unfortunately is seldom detected until after death. Tumours of the bladder and renal disease can scarcely be regarded as contra-indications to lithotripsy, for although they of course diminish the chances of a successful issue, they still more increase the risks of any cutting operation.

With regard to lithotripsy in cases of *multiple calculi*, the author gives the practical hint that the surgeon should confine his attention to one stone at a time, and not attack a second until the first has been pretty thoroughly pulverized; by this precaution the risk of encumbering the bladder with a large number of angular fragments is avoided.

In terminating this notice of Sir Henry Thompson's excellent volume, we will refer to a point of some historical interest, namely, the question, who was the originator of lithotripsy? In the present work, the credit of first systematizing the plan of treating calculus by crushing is attributed to Gruithuisen, a Bavarian surgeon, who wrote in 1813, and a similar statement is made by Sédillot, Velpeau, Coulson, and most other authorities who have referred to the subject; but in Vol. XI. of the *British and Foreign Medical Review*, for Jan. 1841 (p. 270), is advanced a claim of priority on behalf of two Italian surgeons, Santorio and Ciucci, who flourished in the seventeenth century, and this claim, so far as we know, has never been satisfactorily disposed of. We may add that for this item of surgical history we are indebted to that well-known *bibliophile*, Dr. Samuel Lewis, of this city.

J. A., JR.

ART. XXX.—1. *The Deformities of the Human Body; a System of Orthopædic Surgery, being a Course of Lectures delivered at St. George's Hospital.* By BERNARD E. BRODHURST, F.R.C.S., etc. etc. 8vo. pp. xii., 259. London: J. & A. Churchill, 1871.

2. *A New Operation for Bony Ankylosis of the Hip-joint with Malposition of the Limb, by Subcutaneous Division of the Neck of the Thigh-bone.* By WILLIAM ADAMS, F.R.C.S., etc. etc. 8vo. pp. vi., 68. London: J. & A. Churchill, 1871.

1. THE chapters of Mr. Brodhurst's work, we learn from the preface, were originally prepared as lectures, which were delivered at St. George's Hospital; subsequently they were published in the *Lancet* and are now reprinted with some modifications, and rather ambitiously heralded as a "System of Orthopædic Surgery." In one sense, indeed, the volume before us may properly be called a systematic work, inasmuch as it devotes a few pages to each subject which is usually included under the head of orthopædic surgery; but if the reader expects to find in Mr. Brodhurst's "System" an exhaustive treatise on the deformities of the human frame, he will be most grievously disappointed; and, indeed, when we call to remembrance the excellent and elaborate works upon special branches of orthopædic surgery, which have been published within a few years, we cannot but wonder that the author should not have rather called his

volume (which, though fairly good as far as it goes, is certainly not very elaborate) a "course of lectures" merely, or even a "text-book," rather than a "system."

We do not purpose to enter into any very lengthy examination of Mr. Brodhurst's work, for his views are necessarily pretty familiar to American surgeons, not only through the pages of the *Lancet*, in which his lectures first appeared, but through the numerous contributions to periodical literature, and the monographs which he has previously published—but shall content ourselves with describing the general plan of the book, and inviting attention to some points which seem to us to call for special comment.

Mr. Brodhurst divides his work into three parts, the first treating of "contractions of the limbs," the second of "affections of the joints," and the third of "deformities of the trunk and neck." The first part contains nine chapters, which are respectively devoted to (1) the causes of congenital and of non-congenital deformities; (2) rickets; (3) contractions of the limbs, with general remarks on subcutaneous surgery and the process of repair in divided tendons; (4) talipes equinus, with its modifications, equino-varus and equino-valgus; (5) talipes varus; (6) talipes valgus; (7) talipes calcaneus; (8) contractions of the leg and thigh; and (9) contractions of the upper extremity. In the second part, under the head of affections of the joints, are considered successively fibrous and bony ankylosis, or, as the author prefers to call it, "ankylosis," congenital and unreduced dislocations, and contracted cicatrices—though why the latter sources of deformity are included among articular affections is not explained. The third part of the work, "Deformities of the Trunk and Neck," is subdivided (rather unnecessarily, we think) into six chapters, which describe the various forms of spinal curvature, and torticollis or wryneck. Separate chapters are devoted to the physiological or normal curvature of the spine, to anterior, and to posterior curvature; but as the two latter are mere exaggerations of the normal curves, as they usually coexist, and as, indeed, they are so common as scarcely to be considered an evidence of disease, they might, it seems to us, have been more usefully, if less systematically, considered in the chapter which is devoted to the physiological curves which are always present. It is to be observed that the affection which is usually known as antero-posterior curvature of the spine (Pott's disease) is here called angular curvature, or caries of the spine.

Mr. Brodhurst's remarks upon the pathology and treatment of the various affections which are considered in his volume are sufficiently practical, and, upon the whole, judicious, and were there no other works on orthopædic surgery in the English language, his book would unquestionably serve a good purpose as a handbook upon the subject. But in view of the fact that there are so many, and, candor compels us to add, so much better works on deformities, perfectly accessible to the profession—some of them, indeed, published by Mr. Brodhurst's own publishers—we cannot but think that he has done unwisely in yielding to the frequent requests to which he alludes in his preface, by reprinting his lectures in the form in which they now appear.

And this brings us to notice what appears to us a very grave fault in Mr. Brodhurst's volume, and that is, his persistently ignoring the work of other well-known writers upon the subjects of which he treats. His sins in this respect against Mr. Adams are perhaps more flagrant than those against any other writer, but the same thing is observable throughout his pages; either Mr. Brodhurst is singularly ignorant of surgical literature, or he has been most reprehensibly careless in the preparation of his work. His injustice towards Mr. Adams we shall have to allude to again, in noticing the latter gentleman's pamphlet, the title of which appears at the head of this article, but we shall now refer, in

justification of the criticism which we have been compelled to make, to a few passages in which other writers have suffered at the hands of the author.

In speaking of ankylosis of the lower jaw (p. 144), the operations of Rizzoli and Esmarch are described, but the name of neither of these surgeons is mentioned, and though the operations are not absolutely claimed as original, no hint is given the student that they are not the author's own.

In describing the treatment of contracted cicatrices, we find no mention made of James of Exeter, Butcher of Dublin, Wood, Teale, or Mütter of Philadelphia, though each of these names is, we should suppose, sufficiently associated with the history of this branch of surgical practice, to merit a brief reference in a work which professes to be so complete and systematic as that now before us.

Finally, in the chapters devoted to club-foot, no reference is made to Mr. Barwell's mode of treating this deformity without tenotomy; and, indeed, we have not been able to find this surgeon's name mentioned in any part of the volume; so that a student who should rely upon Mr. Brodhurst's "System of Orthopædic Surgery," would probably never imagine that such a writer as Mr. Barwell had ever existed.

2. Mr. Adams's pamphlet consists in a reprint from the pages of the *British Medical Journal* of his "Remarks on the Subcutaneous Division of the Neck of the Thigh-bone, etc.," and of his subsequent paper "On the Selection of Cases" for the operation in question. To these are added the details of several cases, published or unpublished, in which the operation has since been resorted to by other surgeons; some interesting "Notes on the Foreign Literature of Subcutaneous Osteotomy," by Dr. Henry Dick; an account of a case in which Mr. L. S. Little treated bony ankylosis of the knee-joint by subcutaneous chiselling; and, finally, an appendix containing the author's correspondence with Mr. Brodhurst, on the subject of the latter's claim to priority in the subcutaneous division of the cervix femoris.

Mr. Adams's first paper is familiar to our readers from an analysis of it having been published in the Quarterly Summary of this Journal, in the number for October, 1870, and we do not intend to dwell upon the remainder of his pamphlet further than to say that he has, in our judgment, most conclusively established the feasibility and the propriety of the operation of subcutaneous division of the neck of the thigh-bone, as a remedy for bony ankylosis of the hip, and that he has fully vindicated his own claim to be considered the introducer and inventor of that operation. The animus displayed towards Mr. Adams by Mr. Brodhurst is so evident throughout the latter gentleman's work,¹ that we are not surprised that he should envy the reputation which Mr. Adams's successful operation on the hip has given him; but we are surprised that Mr. Brodhurst should have had the weakness to suppose that he had in any degree anticipated Mr. Adams's operation, either by his own subcutaneous section of a great-toe, or by his previous operation on the hip, which was *not* subcutaneous, and which, so far from being a "division of the neck of the thigh-bone," was, to all intents and purposes, an excision of the head and neck of the femur.

As to Mr. Little's operation on the knee, it is to be observed that it is a mere modification of that of Brainard of Chicago, and that Mr. Adams has never

¹ Thus, in his "History of Subcutaneous Surgery" (*Deformities of the Human Body*, p. 45), Mr. Brodhurst merely says, after lauding Guérin and other French surgeons, "Mr. Tamplin and Mr. W. Adams have also written on this subject;" while yet he must know that Mr. Adams's Jacksonian Essay on Club-foot is, by common consent, regarded as equal, if not superior, to any other work on the subject, in any language.

claimed to be the inventor of subcutaneous osteotomy, but merely the first to apply subcutaneous osteotomy to the cervix femoris.

Both Mr. Brodhurst's volume and Mr. Adams's pamphlet are well illustrated with finely finished wood-cuts.

J. A., JR.

ART. XXXI.—*Restorative Medicine*. An Harveian Annual Oration delivered at the Royal College of Physicians, London, on June 21, 1871. (The 210th Anniversary.) By THOMAS KING CHAMBERS, M.D., etc. With two sequels. 12mo. pp. 85. Philadelphia: Henry C. Lea, 1871.

In the preface to this elegantly printed little volume, the author announces that in two respects he has departed from established usage. His oration was delivered in English instead of the customary Latin, and it was first published in America instead of England. He has set a good example in breaking a rule which once insured, as it was intended to do, an audience among the learned of all countries, but which it is now mere pedantry to observe.

He remembers that the English-speaking nations are "bands of relatives whom we are much prouder to claim, and to exhort to mutual love and affection, in a tongue that recalls the fact of blood being thicker than water;" then adds: "This year the oration, though delivered in England, shall be printed and published in America first. The offering is a poor one—then let it be repaid by a richer." These cordial words must revive the desire in every scholar's heart that the dawn of the universal republic of letters may soon arise, and that the rights and courtesies belonging to its citizens may be secure wherever the culture of science and literature is known.

The orator begins by observing that "medicine is now entering upon a biological phase," which he explains by representing disease "as a mode of living; an imperfect form of undeveloped vitality; a loss of something present in health." Whether or not there is any novelty in this conception, so illogically expressed, is a question which he unhesitatingly answers in the affirmative, and describes the Greeks as teaching that disease consists in an excess of some humour to be eliminated; the Galenists, as some excessive or insufficient action, to be regulated by a contrary remedy; the Naturalists, as an effort of nature, to be meddled with only when nature is inadequate to her duty; the Chemists, as some poison to be neutralized; and the Anatomists, as some morbid action to be diverted by counter-irritation. All agreed, says our author, that in disease something is added to the animal frame, "which needs to be reduced, or opposed, or assisted, or neutralized, or concentrated." The present tendency of medicine, on the other hand, is to take "an essentially opposite view;" to regard disease as "something less, not something more, than life." In illustration of the same alleged antagonism between the old therapeutics and that of the present day, he places side by side two pictures, the one representing the former hospital physician, who gave "five grains of calomel, three times a day, to cure acute rheumatism, mercurials and purgatives in enteric fevers, tartar emetic in full doses, and venesection stroke upon stroke in pneumonia; who narcotized with monstrous doses of opium the brain of a raving drunkard, exhausted with artificial sweats the moist skin of a gouty man, or turned his urine alkaline with soda and potash, and scalped with blisters the acute maniac and the hydrocephalic child"—and another, in which the blandly benevolent doctor of the present day plies his patients with "cod-liver

oil, hypophosphate of lime, phosphates of iron, manganese, soda, and potass, or gall, pepsine, and pancreatine," to say nothing of carbolic acid, the permanganates, and the less new-fangled remedies, "iron, digitalis, quinia, arsenic, warmth, and oxygen," to which must be added, "the iodides and bromides."

In so brief a notice as this of a concise summary of former doctrines of cure, elaborate criticism would be out of place, but we cannot allow the above sketch of therapeutic theories to be either just or accurate. It is refuted by the author's own statement of the doctrine of the Naturalists, who sought to assist nature in her struggle with the powers of disease; and the system of Brown differs from that which he advocates, chiefly in being less dogmatic and exclusive, and founded on facts which, according to the light of the time in which Brown lived, were much more scientifically interpreted.

And when we examine the particulars which the author adduces in support of his doctrine, we cannot help being struck with the violence with which some of them are pressed into the service of his theory. What, for example, have iodine and bromine to do with the "restoration" of the diseased organs in the same sense as oil, and lime, and iron? In order to justify their position in his system, the author is obliged to invent for them a mode of action which is ingenious, certainly, and much more so, we apprehend, than justified by a sound interpretation of facts. He remarks, very truly, that the diseases in which these remedies are most curative, "syphilis, aneurism, epilepsy, gout, hysteria, ague, lead-poison, and acute hydrocephalus," have no obvious connection with one another; to account for their power of cure, therefore, he is obliged to resort to the hypothesis "that they are related to one another in virtue of an imperfect vitality of the white fibrous tissues with which bones and trunk-nerves are sheathed." To discuss such a proposition would be futile; but a statement of it, as gravely propounded, suffices to show that now, as in all past times, the acutest physicians may damage their prestige by yielding to the temptation to theorize.

In a subsequent paragraph we are told: "That which has above all things contributed to a change of practice, is the gradual course of change in our ideas of inflammation;" and those from Alison to Beale are summarily described. But the author appears to us to have overlooked the fact that these theories are, for the most part, of later date than the clinical demonstration of the self-limited nature of inflammation, to which alone we believe that a change in the treatment of that process is to be ascribed.

The rest of the lecture is mainly occupied by passing allusions to subordinate topics which need not be here discussed; and two "Sequels" contain an imaginary conversation between imaginary characters, intended to represent some of the current professional and social ideas. The alcohol question comes up for remark, and the author protests against the objection that the use of alcohol is merely for pleasure, asking: "And is the loss of pleasure no loss?" A most pertinent, and, if well considered, weighty question; for what is pleasure but that which it is our nature to seek, and without which we would be lower than the brutes that perish—mere clods of earth? The love of pleasure is innate, legitimate, and necessary; if we abuse it, so much the worse for us.

Among the desultory remarks in this sprightly dialogue this one is worth noting, for, *mutatis mutandis*, it is quite as pertinent in America as in England: "A hospital pupil nowadays gets so drenched with lectures on theories and views, that there is no room in his brains for common sense." "Poor much-lectured student!" "Educatio means a bringing out of powers, not a cramming of geese."

The "woman question" also receives a passing notice. After remarking that

"a joint education will certainly not answer," and ridiculing the feminine flutter over the admission of certain females to medical practice, the author adds: "When the wished-for end is attained, of having one examination as a portal to practice, women cannot justly be excluded from it. In fact, it is very desirable that they should be included; for, since some of the public are anxious to be attended by women, and there is nothing to prevent it in law, I believe it is much better that we should have these medical persons under our control in the register, than that they should be free lances, who might conceal disgraceful practices under the cloak of 'unregistered practitioner.' . . . I do not think it at all self-evident that female practitioners must be the rivals of men. . . . As midwives of a superior sort, there is an opening for them, not only to make a good income, but really to benefit the public." Further on the author urges the appointment by government of women to the offices of inspectors of establishments for the charitable support of children, and of examiners of prostitutes under the contagious diseases act, and expresses a desire "to see the present 'proprietresses' of lunatic asylums replaced by fully educated medical women." Evidently Dr. Chambers, in offering this little volume to the American medical profession, through a Philadelphia publisher, was not aware of the contempt which such sentiments would excite in the bosoms of some of his possible readers!

In laying aside this little volume, we cannot but express a hope that its author will present its views to the medical public in a more methodical and elaborate form; for, however much they may seem to be open to criticism, they cannot but secure attention and respect, as the judgments on various scientific and professional topics of a physician whose earnestness, industry, and sagacity place him in the front rank of living practitioners. A. S.

ART. XXXII.—*A Treatise on Gout, Rheumatism, and the Allied Affections.*

By PETER HOOD, M.D. 12mo. pp. 414. London: J. & A. Churchill, 1871.

DR. HOOD is dissatisfied with all the prevailing theories as to the pathology of gout, and attempts in the work before us to demonstrate that all its symptoms may be traced back to deranged function of the liver, and this in its turn he regards as a manifestation of dyspepsia. He evidently thinks the liver somewhat neglected by recent pathologists, and its claims to rank high in the lists of peccant organs are therefore very fully advocated; he thinks, also, that while diseases of the liver may in their early stages be easily overlooked, those of the kidneys, from the facility with which the urine can be examined, are readily recognized. The latter have thus come to occupy an undue share of medical attention; more especially since he holds that they are very frequently dependent upon irritation caused by the accumulation in the blood of effete products, which have not been eliminated from the system by the liver. That we may not be supposed to misstate what he has really said on this point, we will quote the following passage from his book:—

"After some years of careful and close observation of this influence, the conviction has been forced upon me that both heart disease and kidney disease are frequently traceable to defects in the hepatic eliminating function. The consequently inefficient depuration of the blood throws a task upon the kidneys that they cannot continue to perform without suffering changes in their struc-

ture. When the liver has become enlarged, a chronic congestion has been produced in it, the ascent of blood to the right side of the heart is impeded, and this mechanical impediment is a fertile source of ultimate organic disease in the heart itself."

With the latter portion of the quotation all of us are prepared to agree, but, perhaps from the want of faith in the controlling influence of the liver in the organism, which Dr. Hood evidently so largely possesses, we are not as ready to admit that a large proportion of cases of cardiac and renal disease are to be attributed to hepatic derangements, since we know that either may occur as an original affection, as the result of a general disease, or as a consequence of a constitutional tendency to degeneration in which the liver shares, but does not necessarily play a predominating part. He condemns the theories of Gairdner and Garrod as being partial, and for holding up as the cause, what is after all only a manifestation of the malady; but his own theory, in so far as it is new, is certainly not less liable to the same objection. Mere dyspepsia will of itself not give rise to gout, as we who live in America have abundant opportunity to observe, and he fails utterly to explain by his theories the protean form of nervous gout, which seems especially to render the lives of the daughters of gouty fathers a perpetual martyrdom. An hereditary tendency to gout, Dr. Hood indeed scarcely admits, for he says the phrase really means the inheritance of a weak stomach, in the same way that consumption is favoured by the possession of hereditarily weak lungs. While admitting, of course, that in a sufferer from a parent's excesses the digestion may be weak, it seems to us that it must almost of necessity have been vigorous in the individual in whom the disease has been acquired. Certain it is that the gouty patient often enjoys a good digestion, and that the powers of the stomach remain good long after the occurrence of manifestations of the diathesis in other parts of the body.

The indulgence in alcohol and tobacco are both regarded by Dr. Hood as predisposing to disease of the heart, although the connection between the use of the latter and gout which he seeks to establish does not seem to us very close. The difference in the amount of pain which individuals of opposite constitutions suffer in an attack of gout is referred by him to the difference in the composition of their blood; thus pain will be severe in one in whom the blood abounds in red corpuscles and fibrin, but in another in whom the blood is deficient in these constituents it will be much less severe.

Two methods are generally employed in the treatment of gout, the specific and the expectant. To the former, which consists in the administration of colchicum, Dr. Hood has the insuperable objection that although it may diminish the severity and duration of a paroxysm, it also lessens the number of the red corpuscles in the blood, and by weakening the patient renders him very liable to relapses; in addition to which he says: "When specifics are laid aside, I think the resources of medicine are amply sufficient to furnish us with a treatment that may properly be called rational rather than expectant." And again, that although formerly in the habit of prescribing colchicum, he is now firmly convinced that gout can be as quickly and more surely cured without the agency of this drug than with it, and that wherever it is thought absolutely necessary to give it, some counteracting agent in the form of medicine, "as the antidote to the bane," should be administered at the same time. The relief which is obtained by its use is ascribed to "its peculiar property of modifying the red corpuscles and of rendering the blood more fluid and less adhesive, so that its passage through the distended capillaries is promoted and the mechanical pressure that was productive of pain is removed."

We think Dr. Hood has somewhat overstated the evils attendant upon the use

of colchicum, and are unwilling to throw overboard our former impressions as to the value of this drug in the treatment of gouty complaints. If administered too freely or for too long a time, it might undoubtedly do harm, but the same objection might be urged against the employment of various other articles of the *materia medica*. When used in moderate doses and with proper care, we believe that it is a valuable medicine, and would be sorry to banish it from the pharmacopœia.

He is almost equally severe in his remarks upon a purely expectant plan of treatment, which he believes to be as unsound in ethics as in science. The remedies which he recommends in the treatment of gout are chiefly those which act upon the liver, the stomach, and bowels, unloading these and in this way aiding in the purification of the blood. Among them we find calomel and various purgative and diuretic alkaline salts. The former is to be administered in the doses in which, according to the faith of our forefathers, it acts energetically in promoting the secretion, or at least the discharge, of bile. We have no doubt that calomel is often an admirable remedy in the treatment of some of the complications of gout, but we are rather surprised at Dr. Hood's recommending a medicine which, given in *the doses according to the faith of our forefathers*, is as likely to produce disintegration of the blood-cells as colchicum, and the same is almost equally true of alkalies in large doses. Dr. Hood lays a good deal of stress, and we think properly, upon the importance of exercise and the proper regulations of the secretions as hygienic measures in the prevention of gout in those predisposed to it, and recommends various local applications for the relief of the pain. Among the latter whiskey is said to be the best, a fact which may explain the relief obtained from various popular applications which generally contain alcohol in some form or other. In other respects the treatment recommended does not differ from that usually employed.

In the last chapter in the book Dr. Hood treats of rheumatism and the allied affections, under which designation are included rheumatoid arthritis and sciatica, but as there is nothing novel in the views expressed as to the pathology or treatment of these affections, we shall not notice them in detail.

The author's style is somewhat rambling, and we are at times at a loss to know what bearing his remarks can have upon the subjects discussed in his book, and we must also confess that we are unable to understand how so firm a believer in the therapeutic virtues of calomel, bloodletting, purgatives, and remedies of that class, can hold colchicum in such aversion, especially as its claims to usefulness rest upon very much the same kind of evidence as those of the other remedies. The book contains, however, the results of Dr. Hood's experience in the treatment of gout, which appears to have been large, and may, therefore, be of value to physicians especially interested in this disease.

J. H. H.

ART. XXXIII.—*Lectures on Aural Catarrh; or the commonest forms of Deafness and their Cure.* (Mostly delivered at St. Mary's Hospital.) By PETER ALLEN, M.D., F.R.C.S. Edin., Aural Surgeon to, and Lecturer on Aural Surgery at, St. Mary's Hospital, etc. 12mo. pp. 271. London: J. & A. Churchill, 1871.

THIS unpretending little volume does not profess to comprise more than a short series of lectures, twelve in number, delivered before the students of St. Mary's Hospital, during the summer session. The author tells us in the preface

that his chief object is to point out the proper *system* to be pursued in the study of aural surgery, or "how to examine, what to look for, and where to find the disease in a case of aural catarrh;" a study which he says is "deplorably neglected, and does not keep pace with that in other lines of scientific medical acquirement." The subject of aural catarrh is selected because it is the commonest form of aural disease, as in fully five-sixths of the cases that come under the notice of aural surgeons the disease has originated in the mucous membrane of the tympanic cavity and Eustachian tube.

The usual division of the ear into external, middle, and internal is adopted, and the *membrana tympani* is held to belong equally to the external and middle, its external surface being a continuation of the lining membrane of the meatus and its internal surface a part of the mucous membrane of the drum. As, therefore, the "appearances of the membrane furnish almost certain means of diagnosing the existence of morbid processes going on in the neighbouring structures," the importance of understanding its anatomy, and of carefully examining it in all cases, is earnestly insisted upon. This might seem unnecessary if it were not for the absurd fact that cases are constantly met with that have been under treatment for months by practitioners in good standing, who have never once examined the organ they were treating. Indeed, gentlemen in extensive practice not unfrequently admit that they have never even seen the membrane, either in health or disease. How much there is in it to be learned, those only know who have given it careful and patient clinical study, or who have taken the trouble to read the admirable monograph of Politzer. The author gives special prominence to the fact that while extensive changes may take place on its mucous lining without the slightest pain, inflammation of its external surface is always painful. This is what the anatomy of the part would lead us to expect, for while numerous filaments of the trifacial ramify on its external surface, no nerves have ever been satisfactorily demonstrated on the tympanic side. A very good summary of the anatomy of the membrane is given in the third lecture.

In the second and third lectures the author gives directions for the examination of the parts of the ear implicated in aural catarrh. We cannot help thinking that he makes a mistake in including in that term "certain chronic forms of inflammation" of the external meatus. Though this is done by several high authorities, Tröltzsch objects to it on the very good ground that the term "catarrh" is by universal consent applied to affections of mucous membrane only, and that the external meatus is lined by true skin, which, however it may be altered by disease, can never become a mucous membrane. Such loose classification cannot fail to lead to confusion, and seems like a partial adherence to the old plan of giving the name of "*otorrhœa*" to all diseases of the ear accompanied by discharge.

The use of the Tröltzsch mirror has become so general as hardly to need notice. The author gives great preference to daylight for illumination of the membrane, as its colour is an element of so much importance in diagnosis.

The fact that we have no satisfactory means of testing the exact amount of hearing is freely admitted. The most convenient test is the ticking of a watch, but there is very often a puzzling disproportion between its indications and the ability of the patient to understand conversation. This is accounted for by the fact that the watch has but one or two tones, which may or may not suit the state of tension of the membranes and ossicula. We have now under treatment two patients of about the same age and neither wanting in intelligence, one of whom can hear the watch readily at ten or twelve feet, but is perceptibly deaf to conversation, while the other, with a "hearing distance" of nine inches,

understands conversation so well that the defect is noticed only by her intimate friends.

An interesting explanation is furnished of the well-known fact that some persons hear perfectly well when they are listening attentively, but are comparatively deaf so soon as the voluntary effort is suspended. The stapedius muscle, which draws the stapes from the fenestra ovalis, and, therefore, relaxes both the membrane of the fenestra rotunda and the membrane of the tympanum, is supplied by a branch of the portio dura, a voluntary nerve, and when the motion of the ossicles is impeded a vigorous action of this muscle is required to effect it. Such a patient is compared to one in whom the accommodative movements of the pupil are hindered by posterior synechia of the iris. We would suggest, as a more apt comparison, a hypermetropic patient, in whom the action of the ciliary muscle may be likened to that of the stapedius. In either case a certain amount of strain is required, and when it is relaxed, sounds become confused or vision blurred. So, also, patients sometimes complain that, though they hear well enough when they are in good health and spirits, they become comparatively deaf when they are anxious or wearied or out of health, and these are just the conditions that make hypermetropic patients feel the need of glasses.

Science has, as yet, furnished very little mechanical assistance to hearing, but something in the nature of *acoustic spectacles* seems hardly beyond the range of future possibilities.

Various explanations have been given of those cases in which the hearing is improved when the patient is travelling on a railroad or is surrounded by noises that confuse the hearing of a sound ear. The case, so often quoted, in which a man could converse with his deaf wife only when a servant was beating a drum, was recorded by Willis, in 1680, and the name "*paracosis Willisiana*" was given to this symptom. The author's explanation is, at least, ingenious. The tensor tympani receives its nervous supply from the otic ganglion and from the motor root of the trifacial. Its movements are therefore involuntary, and as the stimulus of light on the retina causes a reflex action of the sphincter pupillæ, so the tensor tympani is put into action by the stimulus of loud sounds upon the auditory nerve.

In the third lecture a very satisfactory account is given of the use of the tuning-fork in distinguishing between affections of the sound-conducting portions of the ear and those of the auditory nerve. The use of this simple and valuable aid to diagnosis is not so general as it should be. If it were intelligently used in every surgeon's office, the list of cases of "*nervous deafness*," the "*amaurosis*" of aural surgery, would experience a decided diminution.

The next three lectures treat of the anatomy of the Eustachian tube and tympanum, the different methods of inflation, and the use of the catheter. The generally accepted theory of Toynbee, that the tympanum is a closed cavity, except when the mouth of the Eustachian tube is opened by the action of the tensor and levator palati muscles, is adopted. The author has modified the Politzer inflator by the addition of a valve for the admission of air into the bag, and of an arrangement by means of which the air is forced through two perforated pads pressed against the openings of both nostrils, instead of through a nozzle inserted into one. This very convenient form of the apparatus can be obtained of Mr. Kolbe, in Ninth Street, Philadelphia. Perhaps more frequent and complacent mention is made of "*my improved Politzer bag*" than the extent of the improvement will justify. His directions, too, for the introduction of the Eustachian catheter are so nearly *verbatim* those given by Tröltsch, and attributed by him to Kramer, that we were not a little surprised at the

parenthesis "(my own)." Two harmless instances of what has been called on the Continent "English appropriativeness." We find the suggestion of Lucæ and Hinton, for the surgeon to compress the air in the patient's pharynx by blowing continuously through an elastic tube inserted into the nostril, instead of forcing air from the rubber bag, very useful in the case of children, who are less sensitive to the idea of having the breath of another person blown into their air-passages than they are to the more formidable appearance of the Politzer apparatus and the startling suddenness of its action. It is sometimes difficult, too, to induce them to swallow at the proper moment.

The remaining lectures are devoted to the diagnosis and treatment of the different forms of aural catarrh. We have not space to give a summary of these chapters. They are concise and clear, and the views expressed do not generally differ materially from those of other recent authors.

The advice of Tröltsch, to use the catheter at once in cases of acute catarrh, is not approved. On account of the danger of injury to the membrane, and of the pain caused by inflation, it is thought better to postpone it until the acute symptoms have subsided. In the later stages and in the chronic form of the disease it is considered indispensable.

There are some very interesting observations on the vexed subject of tinnitus, a symptom which is held to be always due to some abnormal pressure upon the nervous expansion of the labyrinth. This may be produced by accumulation of secretions within the drum, thickening of its lining membrane, distension of its vessels, or inward curvature of the membrane from closure of the Eustachian tube or other cause.

The operation of paracentesis of the membrane, which Sir Astley Cooper introduced with so much *éclat* and afterwards abandoned, the author considers applicable only to the evacuation of accumulations of pus in purulent catarrh. In all other cases he considers it hazardous and useless. Mr. Hinton's treatment of cases in which there is an accumulation of inspissated and tenacious mucus in the tympanum, by incising the membrane and syringing a solution of soda through the tympanum by the meatus, receives unqualified condemnation. Nevertheless, we have all seen a number of very satisfactory cases recorded by Mr. Hinton.

The author is very decided in the opinion that whatever virtue there may be in "Toynbee's artificial membrana tympani," is due to the support given to the ossicula by pressure, and not, as claimed by its inventor, to closure of the opening made by a perforation or partial destruction of the natural membrane. He thinks that this object is accomplished at least equally well by the cotton pellet of Dr. Yearsley, and, therefore, warmly espouses the cause of the latter in the contest for priority in this valuable discovery.

We have thus alluded to the points that seemed to us of most interest, and take pleasure in cordially commending the lectures, not only as an aid to the student and to the "busy practitioner," but as a valuable addition to the comparatively scanty literature of aural pathology.

To seekers after truth who seriously ask if anything can really be done for the ear, we think a careful perusal of this little book will furnish a satisfactory answer. As it is small in compass, and easy and pleasant to read, this may be not the least important part of its mission. Professor Syme, a few years ago, classified diseases of the ear as—"1st. Curable, the province of the surgeon; 2d. Incurable, belonging to the aurist." The fact was that the strange neglect of the subject by the regular profession, left an open and most inviting field for a set of ignorant and unprincipled adventurers, to whom crowds of patients, in utter despair of "regular treatment," could not be blamed for resorting.

The title of "aurist" became, in consequence, a by-word and reproach, and he was a bold man who dared to incur it. But, thanks to the labours of Toynbee and Wilde in Great Britain, and Kramer, Tröltsch, Politzer, and others on the Continent, it is quite possible now to be an aurist without being a quack.

Discredit has been brought upon aural surgery by the fact that aural surgeons are too often called upon to treat, not present disease, but the irremediable effects of disease which, unopposed, has done its worst and subsided years before. With equal consistency, we might allow a patient to walk about with an unrecognized or neglected endocarditis, and rail at the inefficiency of medicine because, ten years afterwards, it is not in the power of the physician to restore the integrity of the valves. It is safe to predict that the number of cases of incurable deafness will diminish in proportion as diseases of the ear are recognized and treated in their earlier stages, at a time when, like all other diseases, they are most amenable to treatment. Fortunately for a large and very anxious class of sufferers, the importance of the subject is universally felt by the profession, and its claims to serious and earnest consideration are becoming generally recognized. G. C. H.

ART. XXXIV.—*Zur physiologischen Akustik und deren Anwendung auf die Pathologie des Gehörorgans.* Von Professor ADAM POLITZER in Wien. Archiv für Ohrenheilkunde. Band VI.

Physiological Acoustics and its Application to the Pathology of the Organ of Hearing. By Prof. ADAM POLITZER, of Vienna.

PROF. POLITZER, the celebrated aural surgeon of Vienna, has devoted much time to research and experiment, and has lately given to the profession, in this most interesting paper, a *résumé* of the most important of his own experiments and those of his colleagues. We have made the following brief abstract, feeling confident that researches of this nature must be of interest to all desiring a more intimate knowledge of physiological and pathological acoustics.

The most important impinging point for the propagation of sound to the labyrinth is the membrana tympani. This small membrane is endowed with such extraordinary powers for the reception and transmission of sound as are observed in no other physical membrane. It possesses the property of transmitting tones of the most variable periods of vibration, not only in succession, but also synchronously. And even if we assume that the separation of the tones in our ear probably takes place in the labyrinth, the fact still remains that all these tones must simultaneously pass the membrana tympani.

The cause of this eminently serviceable quality of the membrana tympani has been sought for partly in its peculiar structure, partly in its conditions of tension. It was asserted that the membrane might possess in the arrangement of its circular and radiate fibres a different density and vibratility at different points, thus rendering possible the simultaneous excitation of the membrane by different tones. Again, the difference in the tension upon the anterior and posterior sections of the membrane, brought about by the traction of the handle of the malleus, has been regarded as the cause of its superior vibratility, as it was supposed that the anterior half was especially excited by the high, and the posterior half by the low, tones.

In opposition to these views, the newly developed theory of Helmholtz gains an important significance for the solution of this question. He has furnished

the evidence upon mathematical and experimental basis that the resonance of a curved membrane is much greater than that of a flatly stretched membrane.

Politzer's experiments on this point were performed upon an apparatus representing on an enlarged scale the membrana tympani and the malleus. The metallic drum, representing the tympanic cavity, was supplied at its posterior perforated end with an auscultatory tube, through which could be perceived the alterations in the tones produced by the different conditions of the membrane. He found that the tones of high and low pitched tuning-forks, which could only be faintly heard with a flat membrane, were at once perceptibly stronger when the membrane was arched by traction made upon the artificial malleus; that it is a matter of indifference, for the augmentation of the resonance of the membrane, whether it be bent convexly or concavely towards the impinging sound. Politzer is of the opinion that an important factor for the simultaneous and uniform reception of differently pitched tones exists in the variable tension produced by the inward curvature of certain parts of the membrane lying between the periphery and the handle of the malleus.

The oblique position, which the plane of the tympanic membrane takes with the axis of the auditory canal, is not without influence upon the tympanic vibrations, since waves of sound which fall upon an oblique plane are partly reflected, hence do not act with such force as when they strike upon a vertical surface. This is, however, the case only with one part of the membrane, namely, of the posterior upper part, while the anterior lower half of the membrane by traction of the handle of the malleus seems to be almost vertical to the external meatus. It is also evident that the loss in intensity of the sound, caused by the oblique position of the membrane, is in part compensated by the reflection of the sound from the anterior wall of the bony canal.

Of greater importance, as well for the physiology as for the pathology of the organ of hearing, it appears to us, is the knowledge of the vibratory relations of the different ossicula, which depend substantially upon the mechanism of their articulations. In earlier experiments¹ it was shown that the bones of the ear vibrate as a whole, and that with each vibration there is a corresponding displacement of the fluid of the labyrinth. It also appeared that with each condensation of the air in the external meatus the membrane and the malleus are driven inwards, and that during this excursion the ratchet-tooth of the malleus fits accurately into that of the body of the incus, whereby the incus is also moved. In the outward movement, on the other hand, the ratchet-tooth of the hammer is withdrawn from the body of the anvil, whereby the hammer is principally moved, the anvil only in a slight degree.

The relations of the extent of movement of the separate ossicles can be ascertained either by Politzer's² or Buck's³ method, the former attaching small glass beads, the latter starch granules, to the different ossicles, and observing, with the microscope armed with a micrometer, their different lengths of vibration after the membrane of the drum had been set into movement by condensation and rarefaction of air in the external meatus. By these researches, which are conducted upon *Lissajou's* well-known method of giving optical expression to vibrating bodies, it was found that the vibrations of the hammer are twice as great as those of the anvil, and four times as great as those of the stirrup.

It follows that the *intensity* of the waves of sound is diminished in the tran-

¹ Politzer, Archiv für Ohrenheilkunde. 1864.

² Wochenblatt der Gesellschaft der Aerzte. 1868.

³ Archives of Ophthalmology and Otology, vol. i. No. 2.

sit from the tympanic membrane to the labyrinth, and in this sense is to be accepted the view of Ludwig, that the ossicles along with their function as conductors of sound at the same time act as quieting organs. Moreover, the anatomical relation of the sound-conducting apparatus shows that a condensation of the waves of sound must occur, in the transit through the chain of bones, inasmuch as they are carried over from the larger surface of the tympanic membrane to the smaller surface of the stapes.

Through the above described configuration of the malleo-incudal joint the auditory organ is protected from violent jarring. The labyrinth is also protected against too strong variations of pressure by the forcible entrance of a stream of air through the Eustachian tube into the cavity of the tympanum, so that the tympanic membrane with the handle of the malleus is moved outwardly in greater rarefactions, the anvil and stirrup following this movement only in a slight degree.

The resistances, under which the ossicles vibrate, are produced partly by the ligaments uniting their articulations, and partly by the fibrous bands and mucous folds extending from the walls of the tympanic cavity to the bones. These resistances are of the greatest importance for the uniform reception and transmission of waves of sound of such numerous periods of vibration. They give, in the next place, a proper degree of firmness to the chain of bones by which is maintained the necessary relation between the tension of the tympanic membrane and that of the ossicles.

The disproportion which arises in pathological processes between the tension of the tympanic membrane and that of the ossicles, must lead to a weakening of the transmission of sound. An increased tension of the tympanic membrane, which not unfrequently arises from occlusion of the *tuba Eustachii* from rarefaction of the air in the tympanic cavity, since the outer pressure of air affects but one side of the membrane, will also be followed by a tenser condition of the ossicles. The result of this is an exceedingly moderate increase of the resistance to the conduction of sound to the labyrinth. There also occur cases where the tympanic membrane, either through long-continued one-sided pressure or through the formation of cicatrices, becomes thin and atrophied, and thus loses its elasticity and tension. Here also the disproportion between the tension of the membrane and that of the ossicles will lead to functional disturbances. This also holds good in those cases of pathological changes of the middle ear where the membrane is not altered, but in which resistances are made by diseased products, which limit the propagation of sounds at the articulations of the ossicles, or at the points where these touch the tympanic walls.

Politzer, in order to test the strength of the intensity of the vibrations of the ossicles under the influence of high and low tones upon the tympanic membrane, conducted the tones of a harmonium by means of a rubber tube into the auditory canal of the preparation. It was found that in tones of like intensity impinging upon the membrane, the extent of the vibrations of the ossicles is less in low than in high tones; in very high tones the extent of the vibrations again decreases.

Of great importance is the examination of the vibrations of the ossicles caused by spoken words upon the tympanic membrane. The perception of the human speech must be regarded as one of the most complicated functions of the organ of hearing; it is far more complicated than the perception of musical tones. In the latter there are but periodic vibrations, whereas speech is composed of a great number of tones and noises, so that a long word, if separated into its different partial vibrations, would furnish a considerable number. The manner

of vibrations of the ossicles is hence in the propagation of speech a much more complicated one than in the passage of tones with regular periodic vibrations.

Uniting the external auditory meatus of the preparation with an ear-trumpet, into the mouth of which single words or entire sentences were spoken, the microscopic observations of the illuminated glass beads attached to the ossicles showed that the ossicles manifested as many movements as the word numbered syllables. The greatest excursion of the movements is in conjunction with the vowels of the syllable. The vibrations of the ossicles produced by the consonants appeared exceedingly small in comparison with those called forth by the vowels.

As is known, in the course of chronic middle-ear affections, diseased products are generated, which load the tympanic membrane or the ossicles, and injure the hearing in different degrees. As such impediments upon the membrane and the ossicles can also be produced artificially, the possibility is herewith given, in this method of investigation, to study the changes which the vibrations of the membrane and ossicles are liable to through inflammatory products.

When only single parts of the tympanic membrane were loaded with a piece of wax, the intensity of the vibrations of the ossicles was diminished, yet not materially; but when the same load was put upon the hammer, or any other of the ossicles, thus creating similar hindrances to the propagation of sound as are produced by exudations and adhesions arising from affections of the middle ear, then the vibratory excursions were materially diminished. If during such a loading of the ossicles high and low tones act upon the tympanic membrane, one observes comparatively stronger vibrations by high than by deep tones. In the same manner, the movements caused by the speaking of words will be decidedly less than the effects of musical tones.

These results agree with the disturbances of hearing observed in patients. Changes in the tympanic membrane, such as cicatrices, calcifications, perforations, will injure the hearing less than pathological products (adhesions, anchyloses) upon the ossicles, which diminish their vibratility. It is also found in such cases that, for the most part, high tones are heard better than low, and the understanding of speech is more affected than the hearing of musical tones.

In artificial destruction of the tympanic membrane, the oscillations of the hammer grow less; when an artificial membrane is introduced, and its caoutchouc plate brought in contact with the handle of the hammer, the vibrations will grow greater again. These results agree with the view¹ that Toynbee's artificial membrane produces an improvement of hearing not only by pressure, but also as a vibratory plate.

Helmholtz first drew attention to the grating noise observed in violent concussions of the ear, and explained it by the striking together of the ratchet-teeth of the malleo-incudal joint. Politzer, however, found that this whizzing noise can also be produced in the ear of a corpse, even when the malleo-incudal joint was artificially anchylosed. He believes that this sound is derived from the whizzing noise of the membrane and the ligaments of the ossicles.

R. M. B.

¹ Politzer, Wiener Medicinal. Halle, 1864.

ART. XXXV.—*Notizen und Erinnerungen eines Ambulanz Chirurgen*, von WILLIAM MACCORMAC, Wundarzt am St. Thomas-Hospitale in London; früherem consultirenden Chirurgen des allgemeinen Krankenhauses von Belfast, und Senatsmitglieder der Königlichen Universität daselbst. Aus dem Englischen übersetzt und mit Bemerkungen versehen von Dr. LOUIS STROMEYER, Verfasser der *Maximen der Kriegsheilkunst*. Mit 7 Heliotypen und 10 Holzschnitten. Hanover: Han'sche Hofbuchhandlung, 1871.

Notes and Recollections of an Ambulance Surgeon, by WILLIAM MACCORMAC, Surgeon to St. Thomas's Hospital, London; formerly Consulting Surgeon to the General Hospital, Belfast, etc. Translated from the English, with Notes by Dr. LOUIS STROMEYER, Author of "Maxims of Military Surgery." With 7 heliotypes and 10 wood-cuts. Hanover, 1871.

WE have already, in the number of this Journal for July, 1871, taken occasion to pass in review Dr. MacCormac's *Notes and Recollections of an Ambulance Surgeon* during the Franco-Prussian war of 1870. At that time we expressed a decided opinion of the excellence of the work, an opinion now corroborated by the appearance of a German translation of the book, from the pen of that accomplished military surgeon, Stromeyer. As is perhaps known to many of our readers, Dr. Stromeyer occupied a high position in the medical staff of the German army. In August, 1870, he was appointed Consulting Surgeon to the third army corps, on the staff of the Crown-Prince of Prussia. He was afterwards assigned to the headquarters of the eleventh army corps; was present at the military operations around Sedan; and subsequently accompanied the German headquarters to Versailles, where he remained until the termination of the war. Dr. Stromeyer's opportunities of observation were thus ample, and it is a fact significant of the merits of the English book that he has chosen to present the result of his own experience in the form of an approving commentary upon the labours of a foreign *confrère*.

In the opening paragraph of his remarks, p. 128, Dr. Stromeyer, speaking of Dr. MacCormac, says:—

"We were much together, it seemed we suited each other. Since the appearance of his book, I find it evident that in most points our principles coincide. Even without writing books, conclusions can readily be arrived at, when each one speaks out plainly what he thinks, after the manner of the insular English, and their transatlantic cousins, rather than concealing by reticence, as is often the case with other nations."

The translator's notes and opinions amount to about fifty pages, and are printed in bulk at the end of Dr. MacCormac's narrative, a form of presentation vastly better than that of the ordinary disfiguring foot-notes. We are thus enabled to obtain a digest, as it were, of Dr. Stromeyer's present views upon many points in military surgery.

The first subject upon which he dwells is that of hospital hygiene. He alludes to the importance of proper ventilation as preventive of fever and dysentery; and to the injurious effects of cold, and especially of draughts of air, as exciting causes of tetanus, rheumatism, and other complications in the slightly wounded; an observation which the experience of some of our own hospitals could fully corroborate. The form of ventilation preferred by Stromeyer is the "ridge ventilation," so familiar to the American surgeon. The necessity of the isolation of wards is also insisted upon, and, in this connection, the unsuitableness of the Royal and Imperial Chateau of Versailles as a hospital is pointed

out. In that stately edifice the rooms communicate so freely by doors, that it was found impossible to enforce isolation of the patients. As a rule, these did not do well in their princely abode, for, our translator adds, "let the ventilation be what it may, isolation is still indispensable in many cases."

The importance of providing proper accommodation for the severely wounded, in close proximity to the seat of action, is forcibly insisted upon by Dr. Stromeier. This, in his judgment, can best be arrived at by the erection of temporary wooden barrack hospitals. He strongly objects to the use of hospital tents, believing that with them little can be accomplished; an opinion which our own experience by no means confirms. Field hospitals, formed of tents, with a capacity limited only by the number of tents pitched, constituted perhaps the most important element in the care of the vast numbers of wounded resulting from the great battles of our American rebellion. We are quite sure, moreover, that the best surgical results were attained in those instances in which these great tent-hospitals were most promptly and thoroughly established and organized.

Unnecessary meddling with and probing of fresh gunshot wounds is denounced at page 134; carbolic acid dressings, in certain cases, are recommended; and the internal administration of iodide of potassium, in contusions of bone, and in peripheral osteitis, is advised.

The distinction between sloughing sores in military practice and true hospital gangrene is well put; a distinction which we have too often seen ignored by military surgeons.

Upon the subject of the influence of nationality on the healing of wounds, Stromeier says that he agrees with MacCormac, who found but little difference in this respect between the French and the Germans. He tells us, however, that between the Danes and the Germans, it seemed to him that the difference was in favour of the former. As to the famous Turcos, Professor Thiersch had drawn his attention at Donzy to the fact that their wounds, even when of bone, healed more rapidly, and with less suppuration, than in the case of other soldiers. This was probably owing, he adds, to their love of milk, and to their manner of life.

The operation of trephining the translator regards as applicable to comparatively few cases. In gunshot wounds of the chest, he justly lays great stress upon the early evacuation of pleuritic collections; a point of practice which we fear was too much neglected by our own military surgeons. Torsion, as a means of arresting hemorrhage, he discountenances, remaining, as he informs us, "true to the ligature."

Professor Stromeier's remarks upon amputations and resections are interesting, and are illustrated by reference to cases, but for the present we must defer their examination. We would remark, however, that, at page 172, an allusion is made to a case of gunshot fracture of the upper third of the femur into the joint, in which our author advises against exarticulation. The concluding paragraph from his pen is characteristic, and we therefore subjoin its translation:—

"It is time to bring to a close my pedantic remarks, lest they assume the form of a German invasion, rather than that of international co-operation. Military surgery cannot dispense with the latter, since every nation contributes, in accordance with the development of its peace—surgery. All civilized peoples must labour with this intent, since military surgery knows no political limits. Civil surgery is the beloved mother, military surgery the diligent daughter, whose forward progress is difficult, as the art of war ever imposes fresh obstacles. One question is always present—What use can we make of

civil surgery in the field? And the answer is always the same—All that the circumstances permit. To understand this requires rather character than learning. The English and Americans are full of character; hence military surgery has much to thank them for.

“For the development of character they possess two efficient elements—a national feeling, and a liberal free education. Of the working of these upon the field of battle, and in the military hospital, this work of MacCormac’s affords a picture. Its stand-point may be sought for in its spontaneity. Every one knows, without being told, what he has to do. And herein consists the sympathetic character of the work; it is not learning which is so evident, but rather a charitable, philanthropic heart. It bleeds sometimes, but the clear head maintains its mastery.

“And now farewell to the Anglo-American ambulance. I send its members, far over land and sea, my most friendly greetings. Farewell also to thee, War surgery, to whom, since 1848, I have devoted so many hours by day and night, I could never regret, because I long since felt what awaited Germany. It is over!

“May a long, honourable peace reward her heroes—military surgery will not then pass away. It has, as MacCormac says, no mysteries for the civil surgeon, when he, as this one, stands at the level of his time.” J. H. B.

ART. XXXVI.—*Partial Paralysis from Reflex Irritation, caused by Congenital Phimosis and Adherent Prepuce*. By LEWIS A. SAYRE, M.D., Vice-President of the American Medical Association, etc. etc. (Extracted from the Transactions of the American Medical Association.) 8vo. pp. 9. Philadelphia: Collins, Printer, 1870.

In this little pamphlet Prof. Sayre first gives an account of three remarkable cases, one of paralysis, simulating spasmodic contraction of both knee-joints, and two of partial paralysis of the legs, in all of which the origin of the affections was traced to the existence of phimosis, complicated in two instances by adhesion of the mucous lining of the prepuce to the glans penis. In each case a perfect cure was effected by circumcision.

By a curious coincidence, three cases of hip disease were on the same day brought to Dr. Sayre’s office, and in none could he at first find any history of injury, or other local cause of the affection. Discovering that in one case phimosis was present in a marked degree, Dr. Sayre asked the patient’s father whether his child had, before becoming lame, been active and sure-footed, and was told in reply that, on the contrary, the boy was excessively clumsy, and “was tumbling down all the time.” Upon examining the other patients, they too were found to be subjects of phimosis, and the “local origin” of the hip disease, in each instance, was thus rendered at least probable; for, as justly remarked by Dr. Sayre, repeated slight falls, though each may seem trivial in itself, may in the aggregate prove the source of as much harm as a single injury which would at first attract more attention.

Dr. Sayre advises that, in cases of phimosis in children in which the prepuce is not markedly redundant, the operation of circumcision should be replaced by the milder procedure of tearing the foreskin from the glans, aiding the re-

traction of the prepuce by making one or more slight nicks at its narrowest part.

Dr. Sayre's cases are in themselves interesting, and are particularly valuable in serving to direct attention to a source of reflex irritation which has not been as generally recognized as it should be.

J. A., JR.

ART. XXXVII.—*On the Treatment of Intra-thoracic Aneurism by the Distal Ligature.* By CHRISTOPHER HEATH, F.R.C.S., etc. (Reprinted with additions from the *Lancet*.) 8vo. pp. 24. London: J. & A. Churchill, 1871.

THIS little pamphlet completes the history of the well-known case in which Mr. Heath, in November, 1865, tied the right common carotid and right subclavian arteries for aneurismal disease, which was at the time supposed to involve the innominate artery, but which was subsequently proved to have been aortic. The patient received very decided benefit from the operation—the aneurismal tumour greatly diminishing in size, and all the urgent symptoms of the case passing away—and for two years it appeared as if the improvement would be permanent; as the result, however, of a very irregular mode of life and of the rather injudicious treatment to which the patient was subjected on one of the numerous occasions on which she was found drunk in the streets, the progress of the disease was ultimately renewed, and death followed external rupture of the sac in December, 1869. The post-mortem examination showed, as already mentioned, that the aneurism was of the aorta and not of the innominate artery.

Mr. Heath refers to Mr. Maunder's case, in which the double ligature was likewise used for supposed innominate aneurism (death following on the sixth day, when the aorta was found to be the artery chiefly involved); and adds the details of a second case in which he attempted to repeat his former operation, but was obliged to desist on account of the aneurismal sac extending much further than had been anticipated. This case also terminated fatally, from hemorrhage, on the sixth day.

Mr. Heath's case is of very great interest, not only because recovery followed so severe an operation as the simultaneous ligation of the subclavian and carotid arteries, but because it also shows that aneurism of the thoracic aorta is not entirely unamenable to surgical treatment. At the same time it is evident that the circumstances could very seldom arise in which a prudent surgeon would consider operative interference justifiable if the aorta were known to be the seat of disease.

Mr. Heath's pamphlet is adorned with two excellent lithographic plates taken from the Transactions of the London Pathological Society: one illustrates his own case, and the other the celebrated case in which Mr. Fearn successfully tied the carotid, and two years afterwards the subclavian artery, for innominate aneurism.

J. A., JR.

ART. XXXVIII.—*Fecundity, Fertility, Sterility, and Allied Topics.* By J. MATTHEWS DUNCAN, A.M., M.D., Lecturer on Midwifery in the School of Medicine, Physician for Diseases of Women to the Royal Infirmary, etc. etc. Second Edition, revised and enlarged. 8vo. pp. xvi., 498. New York: William Wood & Co., 1871.

THE profession have so fully confirmed the favourable opinion which this Journal expressed upon the appearance of Dr. Duncan's work, that the first edition has been exhausted and a new one published because of the demand which still exists for it. In the second edition, however, the author, from the lack of time and fresh data, has adhered closely to the letter of the work as it first appeared, but has made some slight alterations and numerous additions, especially in foot-notes. In the notice of the first edition which appeared in the No. of this Journal for July, 1868, p. 235, Dr. Duncan's conclusions from his researches contained in the first four of the ten parts into which the book is divided, were given. We now propose to treat the remaining six parts in a similar manner, thus giving to our readers, in a condensed form, the conclusions arrived at by Dr. Duncan in his elaborate research. The inquiry is for the most part based on the statistics of 16,593 children legitimately born in 1855, in Edinburgh and Glasgow.

It will be remembered that in the first four parts of the book the author discussed—I. *Variations of the fecundity and fertility of woman according to age.* II. *The weight and length of the newly-born child.* III. *Some laws of the production of twins.* IV. *The laws of the fertility of women.*

Part V. is *On some Laws of the Sterility of Women.* Fifteen per cent. of all the marriages between fifteen and forty-five years of age, it was ascertained, were sterile. Sterility is found to vary according to the ages of wives as follows: about seven per cent. of all marriages between fifteen and nineteen years of age inclusive are without offspring; those married at ages from twenty to twenty-four inclusive are almost all fertile, and after that age sterility gradually increases according to the greater age at the time of marriage. The main element in the expectation of sterility is the age of the woman at marriage.

The question of a woman's being probably sterile is decided in three years of married life. For while a large number are fertile for a first time in each of the first three years of married life, only seven per cent. of the fertile bear first children after three years of marriage. When the expectation of fertility is greatest, the question of probable sterility is soonest decided, and *vice versa*. For of the wives married from twenty to twenty-four, who are all fertile, only 6.2 per cent. begin to breed after three years of marriage, while at other ages, with less fecundity, a greater percentage commences after the completion of the third year of marriage. Dr. D. finds that relative sterility (sterility occurring in those who have borne children) will arrive after a shorter time (not earlier) according as the age at marriage is greater. Professor Tait has shown that the older a woman is at marriage, the older is she before her fertility is exhausted; that is, before the advent of relative sterility. As regards the expectation of relative sterility, the law deduced is that a wife who, having had children, has ceased for three years to exhibit fertility, has probably become relatively sterile; that is, will probably bear no more children; and the probability increases as time elapses.

Part VI. treats of *Formulae representing the Fecundity and Fertility of Women*, and is written by Prof. Tait. By *fecundity* at a given age is meant the probability that during the lapse of one year of married life, at that age,

pregnancy, producing a viable child, will ensue. By *fertility*, at any age, is meant the number of children which a married woman of that age is likely to have during the rest of her life, or some numerical multiple of it. From Dr. Duncan's tables Prof. Tait derives the important law that "fecundity is proportional to the number of years a woman's age is under fifty, and fertility at that age is proportional to the square of the same number."

Part VII. is a consideration of the *Mortality of Childbed*, and it is in this part that the principal additions to the work have been made. The best approximation to the truth that the author can make, taking into consideration his own statistics and those furnished by other authors, is that not fewer than one in every one hundred and twenty women delivered at or near the full time, die within the four weeks of childbed. The mortality of first labours is about twice the mortality of all subsequent labours taken together. The mortality from puerperal fever following first labours is about twice the mortality from puerperal fever following all subsequent labours taken together. (In Edinburgh and Glasgow, in 1855, puerperal fever carried off .7 per cent. of the primiparæ and .25 per cent. of the multiparæ.) As the number of a woman's labours increases above nine, the risk of death from puerperal fever following labour increases with the number. If a woman have a large family, she escapes extraordinary risk in surviving her first labour, to come again into extraordinary and increasing risk as she bears her ninth and subsequent children. Puerperal fever mortality is at its lowest among the lying-in aged from twenty-five to thirty-five, rises on either side of this age, but it rises far more quickly and highly as age decreases than as age advances. The mortality of childbearing women from puerperal fever in England, at four different ages, corrected for primiparity, is shown in the following table:—

Ages	15—24	25—34	35—44	45—54
Percentage . . . . .	.181	.121	.154	.159

The following are the chief conclusions deducible from a study of the relation of the age of the mother to the mortality accompanying parturition: 1st. Youthfulness has less influence in producing mortality from parturition than elderliness. 2d. From the earliest age of childbearing there is a climax of diminishing puerperal mortality, succeeded by an anti-climax of puerperal mortality increasing till the end of childbearing life. 3d. The age of least mortality is near twenty-five years, and on either side of this age mortality gradually increases with the diminution or increase of age. 4th. Above twenty-five years puerperal mortality increases at a much higher rate than it increases at corresponding periods below twenty-five years, a circumstance which decidedly throws the greater safety to the side of the quinquenniad 20–25. 5th. Though it is not deducible from anything in this part, it is too interesting to escape notice, that the age of greatest safety in parturition coincides with the age of greatest fecundity, and that, during the whole of childbearing life, safety in parturition appears to be directly as fecundity, and *vice versa*.

In the seventh chapter of this part is discussed the relative mortality of puerperal fever in hospital and private practice, and the author concludes that one can scarcely doubt that, were they properly tried, hospitals would be at least not far from equal to private practice so far as regards lowness of death-rate. Dr. D. can find no ground for the awful suspicion that well-managed hospitals have caused a large, unnecessary, or avoidable mortality, or developed diseases

previously unheard of. In regard to aggregation as a source of danger to lying-in women, Dr. D. unhesitatingly expresses his assurance that they are without any sufficient foundation, and arrays himself in opposition to the views of Simpson, Stark, Evory Kennedy, and Hervieux.

Part VIII. is *On the Age of Nubility*, and its object is to show at what age it is wisest for women to enter the married state. It is fixed at about from twenty to twenty-five years. Below twenty years of age woman is immature; she runs considerable risk of proving sterile; and if she does bear a child, she runs a comparatively high risk of dying in childbed; besides, her early marriage brings other disadvantages which need not be here enumerated. The woman above twenty-five years of age is mature, but to counterbalance this she encounters some greater risks than the very young wife, though of a similar nature.

The Doctrine of the Duration of Labour is the subject of Part IX., and the author propounds two propositions and supports them with the necessary evidence. They are, 1st, the mortality of women in parturition and childbed increases with the increasing duration of labour (in an undetermined ratio); 2d, the duration of labour is only an inconsiderable item among the many causes (single or combined) of the mortality of women in parturition and the subsequent childbed. This latter proposition is embodied in the familiar apophthegm, "Meddlesome midwifery is bad."

The last Part (X.) of the book is *On the Duration of Pregnancy*. Dr. D. states that cases might be easily adduced from the works of eminent obstetricians to prove that a single insemination at any period of the interval between the menstrual periods may result in the fertilization of the female, and he believes that it does not unfrequently happen that the seminal animalcules remain in the passages till the ovum is prepared and discharged from its vesicle. It might be objected to this explanation that these spermatozoa would be removed by the menstruation contemporaneous with the discharge of the ovum. Dr. D. believes that when menstruation does supervene on a single recent coitus, this will probably happen, unless the semen have permeated the Fallopian tubes, and thus advanced beyond the scope of the menstrual flux. But the study of such cases, as recorded by various authors, reveals this interesting fact, that under such circumstances menstruation often does not take place at all, or only very scantily; the uterine system, as it were, anticipating the conception, and preventing the failure which might result from a free discharge of blood.

The interval between conception (union of the semen and ovum) and parturition has not been exactly ascertained in any case. The average interval between insemination and parturition, in forty-eight cases collected by the author, was 275 days; but it may be noted that the largest number of cases at any particular day was seven at the 274th day. The interval between the last menstruation and parturition is stated to be, on an average, 278 days. This period exceeds the average interval between insemination and parturition by three days, and it may be argued from this that conception occurs generally a few days after menstruation is finished, a view which is confirmed by many other physiological observations.

In predicting the day of confinement, Dr. D. uses the figures above given, and thus obtains the most likely day of confinement, or, perhaps better, the middle day of the fortnight in which it will probably occur. For his patients he predicts the fortnight. The results of 153 predictions recorded in his note-book the author analyzes. In ten cases the day of confinement was predicted exactly; in eighty it occurred, on an average, seven and a half days earlier, and in sixty-three eight and a half days later, than was predicted. The average error

was eight days on the one side or the other of the ascertained average day, a circumstance indicating that the prediction should state the fortnight of confinement. Thus it is seen that the intervals between insemination and parturition, and between menstruation and parturition, have no standard length, but vary within certain limits.

As regards the protraction of the period of pregnancy, the author holds that while absolute proof of the prolongation of real pregnancy beyond its usual limits is still deficient, yet there is evidence to establish the probability that it may be protracted beyond such limits, to the extent of three or four weeks, or even longer.

All the conclusions of Dr. Duncan are deduced from elaborate statistical tables, 131 in number, constructed with great care and with an apparently earnest endeavour to eliminate error. The book is a model of the statistical method of research, and reflects great credit upon the ability and industry of its author, and we earnestly commend its perusal to all interested in the subjects which it embraces.

I. M. H.

ART. XXXIX.—*Bloodletting as a Therapeutic Resource in Obstetric Medicine.*

By FORDYCE BARKER, M.D., Clinical Professor of Midwifery and Diseases of Women in the Bellevue Hospital Medical College, Obstetrical Physician to Bellevue Hospital, etc. etc. 8vo. pp. 14. (Reprinted from the N. Y. Medical Journal, January, 1871.)

IN the present pamphlet, which embraces the essay read by Dr. B. before the N. Y. County Medical Society, Dec. 5, on the subject of bleeding in obstetrical practice, he discusses the all-important question of the value of the lancet as a preventive and curative agent for the accidents and diseases of the pregnant female, during gestation, parturition, and the succeeding puerperal state. When we consider the extent to which bloodletting was carried by the leading obstetricians of the olden time, both for the attainment of remedial and preventive ends, compared with its almost entire abandonment by those of modern times, the question naturally suggests itself, Which pursued the right track? It will be found, as Dr. B. correctly remarks, that all the standard authorities who, in Great Britain and America, thirty-three years ago, guided the practice of obstetrics, recognized bloodletting as a therapeutic agent, demanded on a long list of morbid conditions constantly occurring during gestation, parturition, and to the close of the puerperal period, in which its use is now neglected as useless, if not positively condemned as injurious—this reaction being brought about even before the idea became prevalent that a change had taken place “in the type” of diseases. But was the propriety of so complete a reaction sustained by the results of clinical midwifery? Were, as Dr. B. inquires, our predecessors, in their profuse use of the lancet, all wrong? Are we, in our present almost entire proscription of it in obstetrical practice, all right? “For my own part,” remarks Dr. B., “within a few years past, I find, as my clinical experience becomes more enlarged, I am gradually getting to bleed more frequently.” And he thinks he is justified in so doing by the results of the practice. In the pamphlet before us he has endeavoured to present a correct appreciation of the true value of bloodletting in accidents of pregnancy, the complications of pregnancy, and the diseases of the puerperal state. The views of Dr. B.,

in their general bearing at least, are unquestionably correct. A careful perusal of the facts and arguments adduced by him in favour of a more frequent use of the lancet in obstetrical practice will be found suggestive and practical, even though we may not be prepared to acknowledge the validity of every proposition he has set forth.

D. F. C.

ART. XL.—*A Practical Treatise on Fractures and Dislocations.* By FRANK HASTINGS HAMILTON, A.M., M.D., LL.D., Professor of the Practice of Surgery, with Operations, in Bellevue Hospital Medical College, etc. Fourth Edition, revised and improved. Illustrated with three hundred and twenty-two wood-cuts. 8vo. pp. xxiv., 789. Philadelphia: Henry C. Lea, 1871.

UPON its first appearance this book was elaborately reviewed in the number of this Journal for April, 1860, and the work is so well known to the profession that the present edition does not call for any extended notice at our hands. Since its issue from the press, it has taken a place among the standard works in medical literature, and three editions having been exhausted, we welcome with pleasure the fourth, as evidence on the part of the profession of a proper appreciation of the value of Professor Hamilton's labours.

We are glad to see that the size of the volume is not materially increased, as we cannot but deprecate the unwieldy bulk which so many books acquire with advancing age, a result which is generally attained from a disinclination to cut out old matter, the product of early labour, in order to make room for what is new. Some thirty-three illustrations have been added, and Dr. Hamilton tells us that nearly one-fourth of the entire number have been changed, many new and original wood-cuts taking the place of the old ones; among which latter class are some taken from Dr. Bigelow's treatise on the Mechanism of Dislocations and Fractures of the Hip. In the same connection the author says: "Since Sir Astley Cooper wrote, probably no one man has thrown so much light upon the subject of hip-joint accidents, or contributed so much towards an accurate and systematic plan of treatment, as the distinguished Boston surgeon."

We regret to see that Dr. Hamilton still claims credit for Dr. Crosby for bringing prominently before the notice of the profession the use of adhesive plaster as a means of extension—we say we regret to see this statement repeated, as the reviewer of Dr. Hamilton's book in this Journal, eleven years ago, demonstrated the error into which the author had fallen. It is unnecessary for us to go over the argument again, as there is no reason to suppose that a repetition of the demonstration would have any effect, and the profession at large, having reaped the advantage of Dr. Wallace's expedient, does not, perhaps, feel much further interest in the matter. When speaking of fractures of the patella, what appears to us to be a very insufficient reference is made to the views of Mr. Hutchinson upon this subject, as set forth in his paper contained in the fifty-second volume of the *Medico-Chirurgical Transactions*, nor is any mention made of the theory of the London surgeon, that the principal factor in producing separation of the fragments is not contraction of the quadriceps extensor femoris, but intra-articular pressure dependent upon effusion into the joint. But we had no intention to criticize, especially do we not desire to do so when there is so little to object to, and we will merely say, by way of conclusion, that the book is as good as it has always been, and is in

every way entitled to the confidence of the profession as a work of reference on this very important and interesting subject.

S. A.

ART. XLI.—*A Treatise on Human Physiology; designed for the Use of Students and Practitioners of Medicine.* By JOHN C. DALTON, M.D., Professor of Physiology and Hygiene in the College of Physicians and Surgeons, New York, etc. Fifth Edition, revised and enlarged. With two hundred and eighty-four illustrations. Philadelphia: Henry C. Lea, 1871.

THIS work is so well and favourably known that commendation of it at this time would be superfluous. The fact of its having passed to a fifth edition is a positive proof of the high appreciation in which it is held by the profession.

The numerous additions in the present edition bear evidence of the careful revision it has undergone. In the chapter on the Formation of Sugar in the Liver we find given the results¹ of Dr. Dalton's recent researches on this subject, with a description of his experiments. In the chapter on the Circulation, there is introduced a description of Marey's sphygmograph and its tracings in health, and of Chauveau's experiments on the rapidity of the arterial circulation and the results thereby obtained, with some remarks on local variations in the capillary circulation. In the chapter on Excretion the results of Dr. Austin Flint, Jr.'s, recent investigations² on the effect of bodily activity on the excretion of urea are noticed. An addition on the origin, termination, and physiological properties of nervous filaments is made to the chapter on the General Structure and Functions of the Nervous System. These, with numerous minor additions, increase the size of the volume upwards of thirty pages.

We venture to express our regret that Dr. Dalton has not made his treatise a *complete* exposition of Human Physiology, but the well-merited success with which the work has met shows, perhaps, the wisdom of confining it to its present scope.

I. M. H.

ART. XLII.—*Practical Therapeutics; considered chiefly with reference to Articles of the Materia Medica.* By EDWARD JOHN WARING, M.D., F.L.S., Surgeon (Retired) in Her Majesty's Indian Army. Second American from the Third London Edition. 8vo. pp. 765. Philadelphia: Lindsay & Blakiston, 1871.

THE advance which therapeutics has made within the last few years has necessitated a complete revision of this work, and in order that the student should not be bewildered by conflicting opinions, Mr. Waring has rewritten much of the book, and substituted for many of the old and uncertain views as regards the mode of action and therapeutic value of a number of the articles of the materia medica the more positive results of recent investigations. He has introduced notices of those medicines which have come into use since the pub-

¹ Amer. Journ. of Med. Sci., Oct. 1871, p. 580.

² See current No. of this Journal, p. 163.

lication of the previous edition; among which we observe chloral, bromide of mercury, iodide of methyl, bichloride of methylene, and apomorphia. He also gives more extended notices of other remedies which, though not strictly new, have, of late years, acquired increased importance as therapeutic agents; as, for example, bromide of potassium, physostigma, carbolic and sulphurous acids, the alkaline hypophosphites, etc.

Notwithstanding these additions, Mr. Waring has, by careful pruning, avoided any increase in the bulk of the volume. The judiciousness, however, of diminishing the number of references to authorities is doubtful; in our opinion, the value of the work was much enhanced by the very numerous foot-note references which it contained, constituting it, indeed, a complete dictionary of therapeutics.

With the manner in which the author treats each article our readers are familiar (see notice of previous edition in No. of this Journal for January, 1867, page 239).

Mr. Waring has ably performed his task of collecting and bringing together the opinions and experience of the most eminent writers, as to the real value of the articles of the *materia medica* in the treatment of disease; and in this third edition he keeps pace with the recent progress of therapeutics. To the practising physician "Waring's Therapeutics" is an extremely valuable aid in enlarging his resources for the treatment of disease.

I. M. H.

ART. XLIII.—*The Harveian Oration delivered at the Royal College of Physicians, London, June 24th, 1870, by WILLIAM GULL, M.D., F.R.S.* 8vo. pp. 52. London: John Churchill & Sons.

IN this oration Dr. Gull has departed from the custom of Harveian orators of lauding the splendour of the illustrious founder's discoveries, or of justifying the scientific method he employed in making them, considering it rather his duty to endeavour to fulfil "Harvey's intention by moving our minds to a consideration of our position as students of medicine, and to encourage a further search into nature's mysteries." In so doing, he immediately falls in with one of the most mooted points in modern science. Life, or rather vital force, having been asserted to be "a power entirely different from, and in no way correlated with, matter and its ordinary forces," would, if so regarded, present an impassable barrier to scientific observation, which only takes note of matter and its ordinary forces. Therefore our author proceeds to criticize the above assertion, showing that living matter does not generate any new power, but only varies the form of physical force; that the admission of physical properties belonging to bioplasm includes the further admission of their correlation with "life-force," and that although the maxim *omne vivum ex ovo* may be true in a majority of instances, the question of spontaneous generation is still an open one. "Science may probably never be able to give an account of the primitive germs of living things, if only because the primeval conditions of the world cannot repeat themselves for our investigation," but whether the masses, germs, or ova, as they may happen to be called, which are thrown off at times by living things, are as limited and specific as we have hitherto regarded them, is the *questio vexata* of the day. The explanation of a Divine Power being the first cause does not, says Dr. Gull,

obviate secondary causes, or explain the processes which lie between the extremes of existence. This region is the proper domain of science, and that which is at present inconceivable in it may be made clear by the advancement of knowledge.

The author next speaks of a subject now much under discussion, and which touches *our* duty to society, namely, of the use of every means which lies within our power of preventing disease; for it is undoubtedly our imperative duty to limit, and if possible to blot out, all diseases of whatever kind. He truly says, "if we may not without the charge of temerity venture to assign the *why* in physical causes, how much more open are we to the charge when we set up ourselves as judges of the moral purposes of disease?" With an emphatic warning to all students of nature to remember that they are viewing the truth each from his own centre rather than from *the* centre, the book comes to an end, leaving the impression that its author is a worthy representative of his great master, Harvey, and one whose broad ideas and generosity of sentiment will insure him a fair hearing by all liberal-minded physicians. L. S. S.

ART. XLIV.—*Notes on Comparative Anatomy. A Syllabus of a Course of Lectures delivered at St. Thomas's Hospital.* By WILLIAM MILLER ORD, M.B. Lond.; Assistant Physician to the Hospital, and Lecturer on Physiology and on Comparative Anatomy in its Medical School. 8vo. pp. 203. London: J. & A. Churchill, 1871.

THIS little volume is designed to give a sketch of the facts treated in the author's lectures, and should be read from the stand-point of the student. The matter herein contained is arranged upon the basis of zoology. This, we think, is a mistake. The idea presented to the mind of the student should be *function* through *structure*. A merely zoological framework gives this indifferently. On pages 170 and 171 the author presents two classifications of the mammalia, without stating to which one he gives preference. This is a necessary consequence of the plan which he has adopted of arranging his materials.

Errors of statement are not more frequent than they are apt to be in books of this kind. We are a little surprised, however, to find, among the characters by which the Rodentia are distinguished, the following: "Orbits not separated from temporal fossæ." The vast majority of mammals possess this feature. The author's definition of a bat would exclude many well-known forms. He says definitely that frugivorous bats "have little or no tail." The collections of London would show at least one remarkable exception to this statement. But it is scarcely fair to dwell upon these and similar mistakes, in view of the really capital account of very many points of structure. This is particularly noticeable in descriptions of the lower forms.

Again we are to note that curious and ungenerous neglect of American scientific labour on the part of Englishmen. One might suppose that Clarke, Morse, and Hyatt had never contributed a line to scientific literature, were we to rest content with Mr. Ord's recognition of them. His lectures would have been all the more interesting, we judge, had he introduced the novel and interesting observation of these gentlemen in his account of the Infusoria, Mollusca, and the fresh-water Palyzoa.

H. A.

ART. XLV.—*The Medical Works of Francisco Lopez de Villalobos, the celebrated Court Physician of Spain, now first translated, with Commentary and Biography.* By GEORGE GASKOIN. 8vo. pp. viii., 312. London: John Churchill & Sons, 1870.

THIS is a quaint and not uninteresting book, to which the editor has added a commentary containing a good deal of curious erudition. The subjects discussed are "The Bubas," or syphilis, "The Tertian Fever," and "Natural Heat." We think Mr. Gaskoin's version of the "Poem on the Bubas" would have been better in honest prose than in the very prosaic verse in which he has chosen to clothe it; and we think certain rather contemptuous reflections upon contemporaneous science might have been judiciously omitted; but, barring these faults, the volume is one which, upon the whole, we are glad has been published, though we think its editor very much overrates both its interest and practical value. The book is very neatly printed. J. A., JR.

ART. XLVI.—*Note-Book of Materia Medica, Pharmacology, and Therapeutics.* By R. E. SCORESBY-JACKSON, M.D., F.R.S.E., etc. Second Edition, revised, enlarged, and brought down to the present date, by Dr. ANGUS MACDONALD, M.A., etc. 12mo. pp. xvi., 686. Edinburgh: MacLachlan & Stewart, 1871.

THIS duodecimo, of nearly seven hundred pages, is a very condensed treatise upon materia medica, which was no doubt invaluable to the attendants upon Dr. Jackson's lectures, for whom it was originally prepared, but for which we cannot predict many readers in this country. Treatises on materia medica are certainly not needed in this latitude, and the therapeutics of the present work are too scanty to bring it into demand. The book is well and very concisely put together, and shows that Dr. Jackson's lectures on materia medica must have been very thorough. We notice, however, the evidences of want of familiarity both with American and German literature, so common amongst the English writers of this branch of medicine. H. C. W., JR.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES

ANATOMY AND PHYSIOLOGY.

1. *Anatomy of the Prostate*.—According to W. SOETLIN, it would appear that the prostate is a conglomerate gland (*Wiener Academie Sitzungsberichte*, vol. 62), the glandulæ composing it being tubular (*Rindfleisch*), and not aciniform. (*Kölliker*, *Henle*, and others). The enveloping material of the individual glandulæ, as might be inferred, being cylindrical and not flat epithelium, as is generally stated. The number of glandulæ in each prostate, Mr. S. has ascertained by the examination of the gland in the cadavers of ten adults to vary from 15 to 32. They are supplied with blood by branches from the arteries distributed to the rectum and bladder; and those distributed along the urethra. —*Centralblatt f. d. Med. Wissenschaften*, No. 22, 1871. D. F. C.

2. *Physiology of the Vagus Nerve*.—L. CONCALO (*Ex. Riv. Clin.*, IX. 1870, in *Schmidt's Jahrbuch*, No. 6, 1870), observed in a patient of his that pressure at the neck, upon the left vagus nerve, prolonged the duration of each pulsation of the heart. The same thing happened, as stated by Czermak, when pressure is made at the same point upon the right vagus. —*Centralblatt f. d. Med. Wissenschaften*, No. 28, 1871. D. F. C.

3. *The Absorption of Insoluble Substances*.—That the old statement "*corpora non agunt nisi sint soluta*" is not absolutely correct, has long been known. Nearly thirty years ago Oesterlen administered unguentum hydrargyri to cats, and found molecules of the metal in their blood. Herbst believed he had satisfactorily demonstrated the absorption of milk and starch corpuscles into the chyle and bloodvessels; and his views were supported by the experiments of Bruch. Donders and Mensonides mingled charcoal with the food of rabbits, and found particles in the blood drawn from every region of the body. Similar researches were undertaken by Marfels and Moleschott, who gave to frogs and dogs blood-corpuscles of sheep and pigment-corpuscles from the choroid, and saw these corpuscles circulating in the web of the frog's foot. Oesterlen, Eberhard, Landerer, and especially Voit, made a series of careful experiments, all showing that if blue ointment were vigorously rubbed into the shaven skin of cats and dogs, minute particles might be found in other and remote organs of the body—as the liver, spleen, pancreas, kidneys, &c. There have been, indeed, some experimenters—as v. Bärensprung, v. Recklinghausen, and a few others—who have obtained only negative results; but, upon the whole, the evidence has been of late years strongly in favour of the possibility of the ab-

sorption of solid substances through the uninjured membranes and skin. Quite recently M. HEINRICH AUSPITZ has given in the *Wiener Medizinischen Jahrbüchern* the results of his experiments on this interesting subject. He has employed a substance which, from its small specific weight and its strongly-defined outline and stability, is quite as serviceable as metallic silver and colouring particles. This is rice-starch meal, which is furthermore easily recognizable by its reaction with iodine and the action of polarized light. The largest rice-starch grains are about twenty times larger than the red corpuscles of the rabbit, whilst the smallest are rather smaller than the red corpuscles. He injected white starch meal as well as starch meal coloured blue with iodine. His first series of experiments consisted of injecting the starch powder into the external jugular vein, the vena cava inferior, and the pulmonary artery, with a view of testing how far it could be recognized when diffused through the tissues of the various organs of the body; and he obtained the general result that the presence of the granules could be almost everywhere easily demonstrated by the appropriate tests mentioned above—as in the lungs, right heart, liver, spleen, kidneys, and brain, and in hemorrhagic exudates. In subsequent experiments he injected starch-molecules suspended in water into the abdominal cavity, and into the subcutaneous connective tissue; in other cases the starch was suspended in oil, and similarly injected; and finally, in another series of cases, the contents of the ductus thoracicus were carefully investigated after injection of the starch into the peritoneal cavity and into the subcutaneous connective tissue. The general results of all these experiments may be thus briefly summed up: Insoluble formed materials are undoubtedly capable of being absorbed, both from the abdominal cavity and from the subcutaneous connective tissue into the circulation; they thus reach the lungs, and, passing through these organs, may enter the systemic circulation. In order to gain entrance into the veins, they traverse the lymphatic vascular system; but it is not yet accurately ascertained whether they enter the circulation exclusively by this route. The epidermis forms a serious but not insurmountable obstacle to absorption of starch-grains from the surface of the skin. All these processes of absorption are materially assisted by the presence of fat, which is absorbed still more readily than starch-grains, and enters the circulation by the same path.—*Lancet*, Sept. 16, 1871.

4. *Pus and Pus-Corpuscles*.—Two highly interesting memoirs on the chemical composition of pus-corpuscles, and on the chemical composition of pus, by Drs. MIESCHER and HOPPE-SEYLER respectively, have recently been published (Hoppe-Seyler's *Med.-Chem. Untersuch.*, 1871, pp. 441-486); indeed, Professor Hoppe-Seyler—no mean authority—regards Miescher's researches as the most important contribution that has been made of late years to the chemistry of pus. We propose to briefly summarize the results arrived at for the benefit of our readers.

Miescher, in order to obtain pus-corpuscles free from serum, treated pus and fabrics impregnated by it with saline solutions of appropriate density. In these liquids the pus-corpuscles sink to the bottom of the fluid, and may be obtained tolerably pure by repeated washings. Attention was first directed to the albuminoids of the protoplasm. Pus-corpuscles are mainly composed of albuminoids, and, when treated with a solution of common salt, they are converted into a viscid gelatinous mass—a change dependent, as Rovida has shown, on the formation of a ring of hyaline substance around each corpuscle; but this is not due to myosin, for Miescher could obtain no reaction for this body. Five albuminoids were obtained, agreeing (in number, at least) with the five different albuminoids found by Kühne in muscle. These were—alkaline albuminate, undetermined whether kept in solution by alkaline phosphate or not; an albuminoid coagulable at 118° to 120° Fahr., which was not merely albumen dissolved in alkaline phosphate; an albuminoid coagulable at the temperature at which ordinary serum-albumen coagulates; Rovida's hyaline substance; and a fifth albuminoid, the reactions of which need not be described here. Miescher was unable to detect paralbumen, though he does not deny its presence. The alcoholic extract of the globules was only investigated for leci-

thin and cerebrin, both of which were found to be present, the former in abundance. No gluten or chondrin was found in the watery extract, nor in the serum of pus. It must be understood that a mixture of lecithin and cerebrin forms the substance to which Liebreich assigned the name "protagon"—a highly phosphorized material; for lecithin leaves on incineration an ash very rich in phosphoric acid. But Miescher has also demonstrated the presence of another phosphorized substance in the nuclei of pus-corpuscles, to which he has assigned the name *nuclein*; and he surmises that this body, on account of its phosphorus, plays an important part in cell-growth and in the genesis of the cell albuminoids and their derivatives. Nuclein closely resembles mucin, but is richer in phosphorus, and it appears to exist preformed in the corpuscles.

With reference to the questions of the origin of pus-corpuscles, their identity with the white blood globules and lymph-corpuscles, and their ultimate fate, Hoppe-Seyler's results are remarkably interesting. Since living white blood corpuscles cannot be obtained from the blood in quantity sufficient for chemical analysis, and the spleen, although furnishing them abundantly, contains cerebrin and glycogen (both of which it is necessary to exclude), a novel expedient was adopted. Fresh crystalline lenses from the ox were introduced into the abdominal cavity of dogs, and, as was expected, the lenses became infiltrated with lymph-corpuscles. The presence of glycogen was proved most clearly in the lenses at the period corresponding to the greatest number of active lymph-cells; hence the conclusion that the glycogen comes from these. If, however, the lenses were allowed to stand till the corpuscles became rigid, sugar was found, but no glycogen. Since no glycogen was detected in the pus from inflammatory abscesses and wounds, its occurrence is a means of distinguishing lymph-cells from pus-corpuscles, although these have their origin in the former. With regard to the fatty degeneration of pus, it is stated that lymph-cells by their transformation into non-contractile pus-corpuscles lose their glycogenic properties, and with excess of oxygen may produce fat; whilst by maceration in water many changes take place, which changes are favoured by access of oxygen. Further, yeast-cells and pus-corpuscles seem to be in many respects very closely allied, and the former seem to contain a substance identical with the nuclein of pus.—*Med. Times and Gaz.*, Sept. 23, 1871.

5. *Congestions that occur consecutive to the Ligature of Arteries.*—Dr. BROWN-SÉQUARD, in a note in a late number of his *Journal de Physiologie*, discusses this subject—a subject which has received little attention, but which seems to have sufficient practical bearing to render it worthy of consideration. He states that in December, 1868, M. Prompt announced to the Société de Biologie that the kidney became hyperæmic when the renal artery was tied. M. Moreau, in the discussion that followed this communication, stated that he had obtained similar results in the case of the spleen and intestine after the ligature of the splenic and mesenteric arteries. More recently, M. Teillais, in a treatise on Simple Chronic Ulcer of the Duodenum, reports that he ligatured the vena porta of a dog, and ascertained that two hours and a half afterwards the liver was in a state of great congestion. M. Brown-Séquard's experiments made on dogs, rabbits, and guinea-pigs are in full accordance with these statements, and show that, even when all or nearly all the arterial supply of the kidney, the spleen, or a portion of the intestine, has been cut off, the district supplied by the arteries ligatured becomes remarkably congested, and he has obtained the same result in the case of the liver on tying the portal vein.

These facts, M. Brown-Séquard remarks, are analogous to many others that are well known—such, for example, as the flow of blood from the inferior portion of a ligatured artery, if opened on the distal side of the ligature, and the elevation of temperature that is often observed to take place after the ligature of the principal arterial trunk of a limb. In the case of the limbs he is inclined to advance the same theory in explanation of all these phenomena. It is to the effect that the application of the ligature paralyzes the vaso-motor nerve-filaments that ramify on or in the coats of the artery tied, producing a corresponding paralysis of the ramifications of the vessel; as a consequence of

which the blood of the *collateral* vessels, finding a passage widely open for it in the parts supplied by the ligature, flows thitherwards, and produces both the congestion and the concomitant elevation of temperature. In the case of the kidney and of the spleen, however, another explanation must be offered. In both cases the arterial supply may be *entirely* cut off, yet the kidney, if watched after the operation, may be actually seen to swell; and if the renal artery between the ligature and the kidney be divided, hemorrhage occurs, which M. Brown-Séquard states lasted during the eight or ten minutes he permitted the animal to live. It is obvious that a *reflux* of blood must here have taken place; and this is due to the fact that the blood throughout the body is subject to considerable pressure during life, occasioned by the elasticity and contractility of the vessels; but if a vaso-motor paralysis exists in any organ—as the kidney, for example—and if the *vis a tergo* of the blood have ceased in consequence of the interruption of the blood-current in the arteries, the diminution of resistance in the vessels of this organ will cause the blood to regurgitate thither through the veins, and produce congestion.

M. Brown-Séquard remarks in passing, that those experimenters who believe that they have demonstrated that the heart can continue to beat in spite of the stoppage of the circulation through its vessels consequent on ligature of the cardiac arteries, have not taken into consideration the fact that a venous reflux occurs, which fills the vessels of the heart in consequence of the vaso-motor paralysis caused by the application of the ligature.

However this may be, a difference is thus shown by M. Brown-Séquard to exist between the case where a main artery of a limb is tied and that where all the vessels distributed to a definite region—as to the kidney—are ligatured. In the former case the venous reflux cannot take place in consequence of the continuation of the ordinary current of the blood from the arteries to the veins through the collateral channels; whilst in the latter case such reflux must certainly occur. In both instances, however, it may well happen that, the quantity of blood passing in a given time into the part where the vaso-motor paralysis exists being less, whilst the vessels themselves are dilated and consequently capable of containing more blood, this has time to become surcharged with carbonic acid; and we have thus one cause at least of the convulsions and other nerve troubles that are sometimes observed immediately, or almost immediately, after the ligature of one of the primitive carotids in man.—*Lancet*, Dec. 2, 1871.

MATERIA MEDICA AND GENERAL THERAPEUTICS AND PHARMACY.

6. *Eucalyptus Globulus*.—Dr. M. C. MACLEAN states (*Practitioner*, Nov. 1871) that he has used the leaves of this plant in the medical wards of Netley Hospital, in cases of chest aneurisms involving pressure on the vagus or its branches, and in cardiac asthma, with marked benefit. Dr. M. says that, with the exception, perhaps, of the subcutaneous injection of morphia, he knows of no remedy so efficacious as the *E. globulus* in allaying pain, relieving dyspnoea, calming irritation, and procuring sleep, in patients suffering from the distressing symptoms induced by pressure on the vagus and its branches, caused by aneurisms rising out of the chest.

The mode of using this remedy is for the patient to smoke cigars made from the leaves of the plant, or by smoking the leaves in a pipe.

In cardiac asthma, Dr. M. has known it to allay the terrible dyspnoea of this affection, when the patient was incapable of smoking the leaf as a cigar or in a pipe, by burning portions of the leaf in a plate near the patient, in the way nitre-paper is familiarly used.

Dr. M. is of the opinion that the action of *E. globulus* is on the nervous system, particularly the vagus.

7. *Monobromized Camphor*.—Prof. DENEFFE, of Ghent, states (*Presse Méd. Belge*, Nov. 19) that for more than two years he has employed a combination of camphor and bromine, which he thinks is entitled to general attention. The celebrated chemist Laurent showed that bromine will easily unite with camphor at the ordinary temperature, but that the product is slowly decomposed by exposure to the air. M. Swartz, Professor of Chemistry at Ghent, has shown that this body heated in a closed vessel is resolved into hydrobromic acid and a crystallized compound which is monobromized camphor (*camphor monobromé*), a body differing only from ordinary camphor by the substitution of an atom of bromine for an atom of hydrogen. It is a perfectly crystallized substance, fusible at 76° C. and boiling at 274°. At Professor Swartz's request, M. Deneffe has investigated the therapeutical properties of this body, and has found it to be an excellent sedative for the nervous system. He intends shortly to publish his cases in proof of this, and, in the present communication, furnishes one of these, in which excitement of the nervous system passing into true delirium tremens was effectually relieved. He prescribed it in the form of pills, seventy grains being made into thirty pills, of which one was given every hour until twenty had been taken. For three days longer from forty-five to sixty grains were given in the twenty-four hours, the quantity being diminished from forty-five to thirty grains daily for a week longer. The recovery was progressive and stable.—*Med. Times and Gazette*, Dec. 2, 1871.

8. *Ozokerit as a Therapeutic Agent*.—Dr. SAMUEL PURDON calls attention (*Dublin Quar. Journ. Med. Sci.*, Nov. 1871) to this substance in the treatment of certain forms of cutaneous disease. "Ozokerit is a vegetable wax, so to speak, or, if you like to apply a more sensational term, 'a burning earth.' It is a hydro-carbon found in Moldavia, Wallachia, the Caucasus, and near the Caspian Sea. From the latter place it is obtained in great quantities, being largely used there for its illuminating properties. It was discovered some years since by a Russian military officer, who communicated the fact to M. Gustave Siemens. The latter gentleman, it is asserted, introduced it into England. In the crude state it is of a dirty greenish colour, and of a light specific gravity, and somewhat fibrous in structure. When rubbed in the hand for a few seconds, it feels like ordinary wax; it readily melts, and a rude candle can be easily made of the 'raw material,' and a cotton wick."

It has been refined so as to form a snow-white, hard, waxy substance. Dr. P. says, however, that the crude article and the yellow oil are the best for medicinal purposes.

"The action of ozokerit," Mr. P. says, "appears to be similar to that of tar; it is not, however, so dirty. The crude is the best, but for private practice the refined may be employed mixed with glycerine. At the hospital we merely mix the dark ozokerit by heat with equal quantities of linseed oil, which, although not a very nice-looking compound, and rather lumpy, still, when rubbed well in with the hand, soon melts. I think this slowness in melting an advantage, especially in such affections as psoriasis. The oil can be used combined with lard, but is inferior to the crude material. Its action appears to be that of a stimulant to the diseased skin. Without lengthening this communication by the recording of cases, I may briefly say that the ozokerit, compared with tar, 'Hebra's tincture' (equal parts of black soap, tar, and methylated spirit dissolved by heat), carbolic acid, and oil of cade, holds its own. Of course, in many cases constitutional remedies were employed. It is only suitable for chronic affections, as eczema, of long standing, and *unaccompanied* by much infiltration of the subcutaneous cellular tissue, psoriasis, tinea tonsurans, and scabies.

"I have suggested to the Messrs. Field, who are also great soap manufacturers, the desirability of making an ozokerit soap for medicinal purposes."

9. *Iodized Hydride*.—Dr. B. W. RICHARDSON, in his lectures on experimental and practical medicine (*Med. Times and Gaz.*, Sept. 23, 1871), makes the following very instructive remarks on this compound:—

"Iodine dissolves readily in amyl hydride, and produces, in the proportion

of twenty grains to the ounce, a solution of great service in practice. When this solution is applied to the skin, the volatile hydride passes off at once as vapour, and leaves the iodine, in considerable quantity, behind, stranded on the part in most equal form of distribution. This application is of singular utility in cases of hard open sores, where it is desired to apply iodine evenly and deeply. Thus, in cases of open strumous glandular disease, the solution plays an important part as a means of cure, and the same in chronic indolent bubo. In bad sloughing fetid ulcerative and suppurative wounds, and in cancer, no solution is so simple, painless, and effective. In these last-named cases the iodine exerts more than a curative influence—it deodorizes; it destroys decomposing organic products; it prevents the absorption of decomposed products, and protects against the secondary fever depending on such absorption. In applying the solution in the cases named, it may be gently poured over the part. There is necessity neither for cotton-wool nor for the brush.

“From the iodized solution of the hydride, iodine itself may be inhaled with advantage in cases of ulcerated throat, and in cases of cavity of the lung. Indeed, whatever value in the treatment of phthisis and of bronchial phthisis there is in iodine, it is best obtained by the mode of administration now being described. Of course we have amongst us much difference of opinion as to the actual value of iodine inhalation, and I do not suggest this method in support of any one particular opinion. I hold my own view, and in favour of the practice in fitting cases, but I wish, for the moment, merely to describe a ready method of applying the practice, so that all who wish may adopt it. In using the twenty-grain solution for inhalation, it is best to dilute it with more of the hydride until the vapour of the iodine given is scarcely at all irritating to the throat. The patient's own sensations on the matter are here the best guide, and with a very little instruction it is easy to secure that five grains of iodine shall be inhaled at one time. There is not the least occasion for hurry or for causing the slightest constriction of the fauces or pain. I usually administer from a little funnel of parchment paper, holding in it some finely teased cotton-wool, on which I drop the solution. From this funnel the patient breathes, holding it a short distance from the nostrils and mouth, so as to allow the admission of plenty of fresh air.

“The solution of iodine in amyl hydride has another application, adapted this time not to the sick person, but to the chamber of the sick. There is no agent at one and the same time so potent for purifying the air of the sick-room as iodine. I introduced it several years back for purifying the air of the room or ward in which sufferers from smallpox are lying; and from all parts of the world, but from India especially, I have received recognitions of the value of the practice. But there has always been some difficulty in carrying out the process. Diffusion by volatilization of the metalloid itself from a chip-box covered with muslin—a method invented by that able surgeon, Mr. Hoffman, formerly of Margate—although it is in many cases most effective, is in most cases too slow, and, if I may use such a term, too local; while the plan of driving off the iodine by heat from a porcelain or metal plate is not a plan to be safely intrusted to a nurse. But with the volatile iodide solution all difficulty subsides. We take a packet of ordinary filter-paper, the paper being cut into pieces three inches in diameter—in fact, cut as it is sold from the chemical storehouses—and on to a packet of one or two dozen, or more, of such papers, we pour the solution until all the pieces are fully saturated with it; then the papers are allowed to dry. They dry very quickly, and are put into a box ready for use. We give a dozen or so of these papers to the nurse, and tell her to keep some of them exposed to the air in two or three places about the sick-room, so that the odour of iodine may be faintly recognizable through every part of the room; and this done, all is done for ordinary circumstances. To meet any unusual unpleasantness of the air, the nurse may take one or two of the papers and burn them like a taper or spill, when the deodorization will be the more rapidly and determinately carried out.

“In instances where a room or ward has been occupied by infectious cases, and it is required to purify quickly and effectively, the iodized hydride may be used in the form of spray. The spray-producer to be employed must be con-

structed of glass, as a metal spray-tube is injured by the solution. Siegle's simple tube answers for the purpose well. It is advisable before using the solution to have the room to be disinfected completely stripped of all furniture, the walls rubbed down, and the floors well swept, scrubbed, and dried. Then, from different positions in the room, the iodized hydride should be distributed in spray. The solution containing twenty grains to the ounce is strong enough. The room should have all its windows and doors closed before the iodine is distributed, and the quantity of solution sprayed should be measured. Practically, I find that one ounce of the solution to four square feet of space is a good adjustment of quantity to space. After the iodine has been distributed from the spray-producer, the room should still be kept closed for twenty-four hours at least; during this time the iodine deposited, at first, in the finest layer on the floors, ceiling, and walls, slowly volatilizes, and, coming into contact with the organic matter, destroys it rapidly. It is prudent not to take a light into the room after the distribution of the solution, until the windows and doors can be reopened, as the amyl hydride vapour easily takes fire.

"The most persistent and offensive odour in rooms that have been occupied by the sick may, by this simple method, be more speedily purified than perhaps by any other known method. In asylum practice we get the most difficult of tasks of purification; for, from the bodies of the insane, organic compounds—probably of the sulphur class—diffuse and permeate everything, yielding the most offensive smells. As products of disease, these, perchance, have not a little to do with the unhealthy condition and physical derangement of the bodies from which they are emitted; and when they once fix in an apartment or room, they stay with a perseverance that is wonderful. I was consulted quite recently, at a house I visited, respecting a room of the house in which an epileptic man died, even months ago. This patient, during his fatal illness, suffered from profuse perspirations giving off the most offensive odours, and still in the room where he had lain, despite all efforts at cleansing it, there was distinct evidence of the odour. To remove this unpleasantness there is nothing that approaches iodine, as asylum experience has proved, and the best way of applying the iodine here, again, is by the spray process described. But when the process is being carried out, it must be carried out thoroughly. If the room be opened too quickly, and air be admitted so as to create too speedy a diffusion of the iodine, the cure will only be temporary, and after a lapse of three or four weeks the odour will be once more distinguishable; for these organic odorous products, if they be not absolutely destroyed, release themselves in time from the destroyer, and, being less evanescent, proclaim that the victory over them is incomplete."

10. *Anæsthetic Calcareo-glycerine for Burns, &c.*—Dr. de BRUYNE extols the following liniment for burns, &c.:—

R. Freshly precipitated hydrate of lime, grammes iij.

Glycerine, grammes cl.

Mix, and heat moderately, and then add:—

Chlorinated chlorohydric ether, grammes iij.

The liquid thus obtained is transparent and clear. A compress of fine linen is thoroughly wet with this, and applied on the burnt part. Immediately over this is to be placed a piece of gold-beater's skin, impermeable taffeta, or even flannel, so as to secure complete occlusion, and prevent the evaporation of the liniment.

Dr. B. is convinced of the beneficial effects of this dressing, not only in burns, but also in ill-conditioned wounds; in atonic, callous, fungous, and foul ulcers; and likewise in certain cutaneous diseases, especially such as are dry and squamous, accompanied with pruritus.—*Revue de Thérapeutique*, Oct. 15, 1871, from *Journal de Bruxelles*, Jan. 1871.

11. *Experiments with Santonin.*—Dr. ROBERT FARQUHARSON records (*British Med. Journal*, Oct. 21, 1871) the following results of a series of experiments made with this article on himself:—

1. *Effect on Vision.*—Twenty minutes after swallowing five grains, I observed flames to assume a decidedly yellow colour, as though spirits were being burnt. Ordinary white gas globes became deeply tinted with yellowish-green, and writing-paper presented the same phenomena in somewhat less marked degree. During three hours the tints gradually increased, after which they faded by slow stages, until vision was restored to its normal standard.

The precise conditions under which these singular results take place, and the exact alterations of colour observed, have been submitted to most exhaustive study by a German physiologist, whose name I cannot now recall. Post-mortem examination proves that a true staining of the retina is rapidly produced, but it is not probable that this can be detected during life by the ophthalmoscope. This opinion I base on the authority of an eminent oculist, and on the fact that, in the somewhat parallel group of cases where yellow vision attends jaundice, I have been unable to discover any unnatural appearance on careful inspection of the fundus of the eye.

2. *Effects on the Urinary Organs.*—Five grains were taken at bedtime, and next morning an irresistible and almost uncontrollable desire to micturate was felt, the act being attended with some irritation and smarting. The urine was of a deep saffron yellow, staining the pot and linen precisely as bile. It was of specific gravity 1.028. The quantity was decidedly increased, and the urea was somewhat in excess. The diuretic action continued during the day; and it was not until 8 o'clock P.M. that the secretion was quite free from foreign pigment.

3. *Effects on the Digestive Organs, and General Symptoms.*—Nausea and dryness of tongue were generally present; and on one occasion, after a ten-grain dose, well-marked tenesmus was experienced both by myself and by a friend who shared the experiment. After five grains, sleep was generally disturbed, and I usually woke unrefreshed, with sickness, frontal headache, and deficient appetite. But the best-marked symptom, and one which I have not hitherto seen described, was a feeling of profound and most unusual depression, accompanied by so much irresolution and want of confidence in my own powers, as to render me quite unfit for work of any kind. This invariably followed even a single five-grain dose; and, beginning with dulness and heaviness, ran on into very much that sort of melancholia which I imagine jaundice sometimes produces. This denotes an effect on the nervous system which ought not to be overlooked; and, should further investigation prove its occurrence to be constant, and not to depend on any peculiar idiosyncrasy of my own, we may yet find in santonin an agent of some value in the almost unexplored regions of mental therapeutics.

12. *Absorption of Gray Ointment and of Corrosive Sublimate through the Unbroken Skin.*—There is a difference of opinion as to whether mercury is absorbed through the unbroken skin. Dr. NEUMANN, in order to settle this question, instituted a number of carefully devised experimental researches, and from them comes to the conclusion that in inunction of gray ointment on an unbroken skin, mercurial globules pass into the hair-sheath, then into the bulb, and into the superficially-opening sebaceous glands (less into those that open into the hair-sheath), and into the upper part of the sweat-glands. In what way and in what form they get thence into the circulation, he could not discover: probably they were changed to bichloride and dissolved by the superficial glandular system.

But in the blood and internal organs, mercury which has been introduced by inunction or by sublimate baths can only be detected by chemical means. Mercury could not be detected, by chemical means, in the subcutaneous tissue.

Mercury does not penetrate through the horny epidermis.—*The Practitioner*, Nov. 1871, from *Wiener Med. Zeitung*.

13. *Influence of Alcohol on the Temperature of the Human Body.*—It is stated in the *Berlin Clin. Wochenschr.*, 1871, that S. RABOW, at the suggestion of E. Leyden, allowed certain patients—mostly convalescents from acute diseases—to partake of brandy and wine, in small doses, from two to three table-spoonfuls. Of twenty-five instances in which this was done, in twenty-three the temperature of the body was found to be raised 0.7 , when it was carefully

tested at the axilla and in ano. In two the temperature remained unchanged. In two typhus patients, to whom four tablespoonfuls of wine were given, the increase of temperature was only 0.1 . Dr. R. hence concludes with Obencen, (*Cbl.* 1869 and '70), that from the depressing effects of alcohol as evidenced by the results of the great majority of experiments, as a therapeutic agent, it is of very little value. By the use of Hungarian wine, says Radziejewski (*Centralblatt f. d. Med. Wissenschaften*, 1871, No. 32), the same effect occurs, that is, a very trifling rise of temperature, as in the observations of Rabow. The latter gentleman made use, it is true, of only diluted alcohol. The same result, however, would have occurred had the ethereal oils been substituted. D. F. C.

14. *Some of the Ill-Effects of Bromide of Potassium.*—Mr. T. O. Wood, Medical Superintendent of Dunston Lodge Asylum, states (*British Med. Journ.*, Oct. 14, 1871) that bromide of potassium, "when given continuously and in large doses, produces a great variety of results, depending generally upon the constitution and bodily condition of the patient at the time of its administration. Its most dangerous effect is when, after a course of comparatively small doses which do not seem to be taking any great hold upon the system generally, or upon the mental symptoms to control which it is given, it *suddenly*, and without apparent cause or warning, displays its cumulative effect, and rapidly reduces the patient to a condition of great bodily prostration, and completely alters the character of the mental symptoms. This physical prostration is at once evident. There are great muscular debility; dimness of sight, with dilated pupils; irregular gait, the patient reeling as though intoxicated; whilst nausea, vomiting, or purgation, with abdominal pain of a dull aching character, may also be present; the breath having a disagreeable odour, which seems peculiar to those who have been for any length of time under the influence of the bromide. Its effect upon the mental symptoms is no less marked. The patient who has been violently excited, glorying in his imaginary power of body and mind, becomes desponding, sullen, melancholic, and frequently lachrymose, often even despairing. One patient, who was discharged from this asylum 'recovered,' has since told me that he knew and felt for some time afterwards the effect of the medicine upon his mind. It produced a feeling of despondency which at times quite overcame him."

Having read Dr. Clouston's admirable paper on the combination of tincture of cannabis Indica with the bromide, Dr. W. resolved to give it a trial. Dr. C. says "cannabis Indica being a diuretic, and the bromide of potassium being carried off by the kidneys, it is probable that the former in that way helps to prevent the cumulative action of the latter when given alone."

Mr. Wood tried this combination in two cases, and with very satisfactory results. In one case the bromide was pushed to a drachm and a half, with the same quantity of tincture of cannabis Indica, and eventually up to two drachms of each drug thrice daily, with the effect of producing "a state of drowsy calmness of the nervous system," and without, in this instance, producing any symptoms of dyspepsia, of physical exhaustion, or of threatened syncope; and thus, as far as these cases go, proving the utility of the combination.

15. *Methyl Hydride.*—Dr. B. W. RICHARDSON makes some instructive remarks (*Med. Times and Gaz.*, Sept. 23, 1871) in relation to this gas, better known under the name of fire-damp.

"In the mine, when the gas is evolved in large quantities, it becomes sometimes a cause of death. It is fire-damp, and, without explosion, it will kill by the same process of narcotism we witnessed in our experiment a few minutes ago. Of this mode of death we may feel assured that, whenever, unhappily, it occurs, it is one of the most painless of deaths. The death must be as easy as the process of going to sleep, and it is probably completed without so much as a struggle. It thus happens that, after this mode of death in the mine, the spectators who first view the sleeping dead are struck by the placidity of the expression of the dead. The bodies are seen in the position usually assumed during sleep—the trunk and extremities gently flexed, the muscles of the face

calm and peaceful, the whole cast that of a sleeper in profound and undisturbed repose. When we read of a body of men having been suffocated with fire-damp, the sorrow arising from the narrative may, therefore, be tempered by the reflection that the death was euthanasia, and was less painful than death is in general amongst humankind.

"To this assurance two other encouraging facts may be added. In death from methyl hydride the percentage of the gas in the air inspired must be very large. For this reason it is possible to live for a long time in a moderate mixture of the gas with air without being conscious of any peculiar effect; whilst recovery from even extreme effects of it is nearly instantaneous when air is freely readmitted. In cases, therefore, where a catastrophe from fire-damp has happened, no effort can be too prolonged on behalf of the sufferers. Hope, in such instances, should be sustained beyond hope; for the narcotic air that lays the man in prostrate sleep will kill only by sleep, will not kill with violence, and may fail to kill altogether.

"From the negative character of this gas, from its insolubility, it is easily carried out of the body. We have to-day witnessed this truth. It ought thereupon to be remembered, as a sequel and a practice, that the means for promoting recovery from the influence of the gas, when life is not extinct, are simplest of simple. The first and most important measure is artificial respiration. When the breathing has actually stopped for three or four minutes after the seemingly fatal inhalation of the gas by the lower animals, respiration may be restored by artificial inflation of the lungs; and in cases of death from fire-damp, when the human life appears to have been extinguished by the breathing of the gas, the process of artificial respiration ought to be as sedulously sustained as after death by drowning, the result being much more likely to prove a success. Together with artificial respiration, warmth—the warmth of a room filled with fresh-heated air—is of moment as a remedy; and near to every mine there ought to be a receiving-room, ready supplied with warm air, and with a simple double-acting bellows for sustaining artificial respiration.

"The day will probably come when some advance will be made in the art of restoring animation at considerable periods of time after what is now called actual death; and when that day arrives there will surely be no form of suspended animation so easy to treat as that from fire-damp. The heart under the influence of this gas outlives the respiration; the lungs are subjected to no extremity of congestion of blood on the one side, nor of exhaustion of blood on the other; the muscles are cast into no spasmodic strain; the nervous centres are oppressed with no extreme tension; the blood is saturated with no soluble poison. Indeed, as an animal killed by this gas lies dead before us—actually dead, so far as we now know about death—it is hard to believe, either from external or internal evidence, that the death has inexorably taken place.

"So much for methyl hydride when it is met with in mines as fire-damp. But we have not yet done with it; it also has an interest to us as marsh gas. In marshes, especially where the soil is of peat, the gas forms in large quantities; and for centuries past, long before the chemical nature and properties of the gas were at all known, it was supposed to be a true malarious poison, the cause of marsh fever.

"I wish at once to dispose of this long-sustained and popular theory. It is no doubt correct, that in places where marsh gas is abundant, malarious fever is prevalent and endemic. It may be that the marsh gas is sometimes a carrier of true malarial poison—I mean that the actual poison, with water vapour, may be diffused through the gas; or it may even be that the presence of the gas in the atmospheric air is, after a long time, injurious to those who breathe the air. But, all these admissions made freely, the fact remains that the gas itself is in no sense of itself a malarious poison, and the theory that assigns to it malarious qualities is utter error. From direct observation I know that the gas may be breathed in the proportion of not less than thirty-five per cent., and although it produces temporary symptoms of drowsiness, sleep, and muscular prostration, it is harmless in other respects, and produces certainly no after-symptoms of a pyrexial character."

16. *On the Proportion of Atropia in the Roots and in the Leaves of Belladonna.*—M. JULES LEFORT, in a memoir read before the Academy of Medicine (Nov. 21, 1871), gave the following as the conclusions from his researches on this subject:—

1st. The leaves of belladonna contain a little less atropia before than after the flowering of the plant.

2d. The leaves should always be collected between the periods of flowering and fructification.

3d. The leaves of the cultivated and of the wild belladonna, gathered at the same period, and from plants of the same age, contain precisely the same amount of atropia.

4th. No comparison can be made between the amount of atropia contained in the leaves and in the roots of belladonna, because the richness of the root varies very greatly according to the age of the plant.

5th. The young roots of belladonna are richer in atropia than the roots of plants of more than two or three years old, because in equal weight the former contain more bark than the latter.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

17. *Tubercular Meningitis.*—Dr. JAMES CUMING, in his instructive report on medicine (*Dublin Quar. Journ. Med. Sci.*, Nov. 1871), remarks: "Hitherto the pathological researches made in cases of tubercular meningitis have been mainly confined to the encephalon, and consequently the descriptions of that affection relate to the lesions found in that organ alone. The morbid appearances presented being generally to a degree and of a character sufficient to account for the uniformly fatal termination of the disease, inquirers rested satisfied, and omitted to examine the remainder of the nervous centres. The difficulty of the task, the time and labour necessary to examine minutely the various regions of the spinal cord in a large number of cases, the unpromising character of the investigations as regards the lessening of the mortality of the disease, have all, no doubt, contributed to this result. Even on a cursory investigation of the subject, it would seem anomalous that tubercle should be so restricted as regards the site of its development to the base of the cerebrum, and that it should not be found in other parts of the nervous centres. Moxon¹ has reported an instance of tubercle of the spinal dura mater in a case of tubercular meningitis; and recently we have, from Liouville,² a careful examination of the subject, which has led that observer to the conclusion that tubercular meningitis is usually a spinal as well as a cerebral affection.

"For two years, during which Dr. Liouville's attention had been fixed upon this subject, the numerous cases of granular tubercular meningitis observed by him in children, adults, and persons advanced in life, did not, in a single instance, show the manifestation confined to the cerebral envelopes; in all there was a similar spinal affection; in all the cerebro-spinal form existed, although the predominance was sometimes considerable, either towards the envelopes of the brain or towards those of the spinal cord.

"When the cord and its envelopes were removed by the ordinary method from the spinal canal, he could at once recognize deep injections all around the dura mater, as well as even in a greater degree upon its inner surface. On making the longitudinal section of the dura mater, and endeavouring to turn to the side the two flaps resulting, the multiplicity of little vessels, gorged with blood, and in some points forming irregular sinuous figures, were at once observed in all cases. They were often covered with little tracts, rosy gray,

¹ Transactions of Pathological Society of London, 1870, p. 12.

² Archives de Physiologie par Brown-Séquard, Charcot, and Vulpian, 1870.

the remains of adhesions. The part of the parietal surface corresponding to these tracts presented a dull granulated condition, particularly noticeable with oblique light. These *débris* indicated the cohesions of the meninges; and, in fact, especially upon the posterior surface, there was almost always a sort of agglutinative drawing of the envelopes to the points where the irritative inflammation had most exerted itself. Even with the naked eye might be observed little projections of the size of a very small pin's head, somewhat rounded in form, grayish, and resistant, placed near the vessels, and which were recognized to be tubercular granulations, imprisoned, so to speak, in the vascular meshes of the morbid products of the serous membrane.

"In severe cases, the internal surface of the dura mater, covered by its arachnoid lining, might be seen studded with a veritable eruption of these little bodies. Sometimes a notable quantity of liquid, pretty fluid, of a yellow citron colour, escaped immediately after the section of the dura mater. The arachnoid offered also notable changes, especially upon the posterior surface of the cord in the median line in the direction of the longitudinal fissure. It was thickened, irregular, muddy, showing at places grayish zones disposed longitudinally or concentrically, sometimes rounded, sometimes adherent to the deeper parts, and at such points it could not be separated from the underlying morbid mass, which was thick, granular, grayish-yellow, or very vascular at spots, and involved to a certain depth, and, as far as the substance of the cord itself, the parts which, in the normal state, are almost free in the sub-arachnoid spaces. At these points, by the naked eye, little projections of the volume of a millet seed, resistant, rounded, isolated, or conglomerated, but most frequently placed along the vessels, were observed. Also in this sub-arachnoid cellular tissue, where the lesions had often their maximum of intensity, was found a muddy serosity of a puriform aspect, more or less thick, and, as it were, elastic. These masses of pathological products thus infiltrated, joined to the cedema and to the general pastiness, gave to the posterior surface of the cord an aspect altogether special. There were projecting points, opaque spots, where it was no longer possible to discern either vessels or spinal nerves, at least at their roots; all these parts were comprised in the thickening and neoplastic transformations, and it was necessary to proceed by careful dissection with needles to analyze completely the lesions produced, and their relations with the normal parts.

"By thus proceeding, although some granulations were remarked accompanying some branches of the spinal nerves, it was discovered that their relations existed especially with the vessels.

"These granulations were found, in fact, always either around a vessel or upon its subdivisions. They seemed sometimes to have narrowed the calibre by augmenting the parietal mass of the vessel, or to have at least influenced the circulation, for on both sides the vessels had undergone modifications in their reciprocal divisions. The coloration of red globules along the vessels was seen, except where there was an opaque mass. The vessels of the surrounding regions were distended with blood; the veins especially appeared sinuous, voluminous, and of a blackish-blue tint.

"There was always a very notable preponderance of these lesions upon the posterior surface of the cord; they were met with in every region.

"When the meninges which penetrated into the grooves were drawn out, analogous alterations were sometimes observed. The lesion also penetrated, in some instances, into the meshwork of the cord itself, and the same tubercular manifestation was noted in the meningeal expansions which passed to the smallest medullary elements. There, also, it seemed to be by the vessels, and the connective tissue surrounding them, that the morbid propagation extended.

"In all cases analogous lesions existed in the encephalon and its membranes.

"Dr. Liouville submitted the morbid products, both in the recent state and after hardening, to microscopic examination, and found in all the points of the meninges affected a considerable formation of young and simple elements, almost all of the same form and the same dimensions, in the connective tissue, and particularly in great number in the neighbourhood of the vessels, with which they seemed to have certain relations; a proliferation of similar elements

in the lymphatic sheath and the adventitious membrane of the vessels. In the greater number of the cases a coagulation of fibrinous appearance occurred in the interior of certain vessels. The little elements so numerous and pressed together were infiltrated, sometimes forming veritable uniform thickenings; sometimes they assumed, on the contrary, the disposition of a tubercular nodule with a central zone, composed of elements undergoing granular fatty degeneration.

"The writer concludes from his researches that for the spinal cord, as for the encephalon, there may be distinguished

A spinal tubercular meningitis,

A tubercular meningo-myelitis,

A tuberculization of the substance of the cord itself,

and that there is an absolute identity in the morbid manifestations in the whole extent of the cerebro-spinal envelopes. This does not exclude any seat of predilection. It does not signify that a special point should not be stricken more frequently and more intensely than other points; but that which stands out prominently is a sort of uniformity in the lesions agreeing with the similarity of structure.

"He considers that by this means will be explained more naturally many of the symptoms attributed, up to the present, wrongly to the modifications of the cerebrum alone. Troubles of the mobility and sensibility, stiffness of the neck and of the trunk, some sort of tetanic spasms, contractions, shaking, trembling, certain functional paralysis (of the bladder and rectum, for example), the protean modifications of hyperæsthesia or of anæsthesia, finally, even the infirmities which result in some cases of cure, find an explanation more simple, because more true, in the possibility of these tubercular spinal lesions of the envelopes or of the centres."

18. *Tuberculous Phthisis*.—The *British Med. Journal* for October 21, 1871, contains some interesting remarks on this affection, by EDW. LONG FOX, M.D., of Bristol.

He sums up his remarks as follows:—

"1. There are several forms of disease included under the head of phthisis.

"2. Tubercle, whether of the lungs or of other organs, is due to a constitutional disease; and this is shown by death occurring without *post-mortem* results sufficient to have caused it.

"3. Tubercle often exists quite independently of caseous deposits or vomicae.

"4. This morbid condition is inheritable, but may be developed *de novo* by debilitating influences.

"5. Its possible manifestations at all ages, and its frequent non-manifestation until the age of puberty, are only analogous to what is seen in other constitutional and inheritable diseases.

"6. Chronic pneumonia found associated with miliary tubercle is not connected with it as cause with effect. The tubercle only becomes developed in cases in which the patient has previously had the tuberculous taint of constitution.

"7. Some fatal chronic pneumonias may owe their irremediable properties to the same constitutional weakness, even where no miliary tubercle is discovered after death.

"8. In general, non-tuberculous phthisis can be distinguished from tuberculous by clinical phenomena, and especially by the use of the thermometer."

19. *Phthisis in which Contraction and Rapid Obliteration of Cavities took place*.—Dr. C. THEODORE WILLIAMS communicated to the Clinical Society of London (Oct. 27, 1871) three cases of this. The patients were two females and one male, and their respective ages were 15, 53, and 27. They had symptoms of phthisis for periods varying from six to twelve months; the disease being for the most part limited to the upper lobe of one lung, where unequivocal signs of a cavity had appeared. The first was a case of caseous pneumonia, where the cavity became obliterated in two months, and the patient has since remained free from cough for more than one year. In the second case, which

from the great prostration, excessive night-sweats, and aphthous state of the mouth, was regarded as unfavourable, the disease followed pleuro-pneumonia, and closure of the cavity was complete in three months. In the third case the patient had fistula, followed by serofulous pneumonia; and a large tinkling cavity, involving the whole upper lobe of the right lung, formed, which became obliterated in two months, cavernous sounds being no longer detected. All three patients were free from family predisposition. They took cod-liver oil, with tonics, and enjoyed a liberal diet. Dr. C. T. Williams remarked that contraction had taken place with unusual rapidity in these cases; and the remarkable feature was, that it gave rise to little or no displacement of the neighbouring organs, and to no marked collapse of the chest. He therefore concluded that the vacuum created by the shrinking of the cavities must have been supplied by an expansion of the lung-tissue round the cicatrix. The obliteration in two months of a cavity sufficiently large to give tinkling sounds was an exceedingly rare occurrence.—*British Med. Journal*, Nov. 11, 1871.

20. *Tubercular Peritonitis*.—Dr. J. KAULICH, in a work of some size, has discussed with great fulness the pathology of peritoneal tuberculosis. Under this term he comprises only cases in which the tubercular element is the primary feature, or, at least, the most prominent. In general, in conjunction with the deposit of tubercular matter, in the peritoneum, there occurs a copious serous exudation into the cavity of the abdomen, imparting to the case an appearance as though it were one of ascites. Each tubercular deposit is invariably surrounded by a newly developed layer of cellular tissue, with a tendency in this to simulate a layer of pseudo-membrane, with a strong disposition to a hemorrhagic discharge. In the further progress of the disease these masses of abnormal cellular tissue have a tendency to contract; their areola by contracting, often cause the formation of areolated elevations, which can often be felt, like a network of cords, through the walls of the abdomen. The separate tubercular deposits frequently exhibit, in the chronic march of the disease, changes that must be considered as anatomical involutions. In such cases, the peritoneum in all its extent exhibits no indications of recent irritation; the abdominal cavity is free from any exudation; the separate tuberculæ are dry, solid, and surrounded by a darkish pigment; others, especially large conglomerated masses of tubercular matter, are of a soft cheesy consistence, or dry and of the appearance of mortar, while other of the conglomerated masses present the appearance of uniform masses of fat. The catalogue of the more general symptoms is that generally accepted, namely, painfulness of abdominal parietes; occasionally severe paroxysms of fever; intumescence and resistance or tenseness, to a greater or less extent, of the abdomen, caused by more or less effusion within the peritoneal sac—loss of appetite, vomiting, constipation; often enlargement of the spleen—difficult often to distinguish from *cirrrosis hepatis*. In many cases, after the patient has suffered for a long period from pain in the region of the navel, with tenderness upon pressure, and tenseness, there will finally present itself an œdematous inflammation at the umbilicus, occupying a space about the size of a man's hand. This chronic inflammation usually disappears gradually; seldom producing an abscess breaking externally. There may, however, sooner or later occur, at the umbilicus, a perforation, from ulceration, of the peritoneum, giving discharge, in a full stream, to the fluid accumulated in the abdomen, and prompt and decided relief to the patient's sufferings. In no case seen by Dr. J. K. has this spontaneous paracentesis exercised any unfavourable influence upon the further course of the disease. In regard to treatment, Dr. J. K. warns us not to resort to paracentesis, so long as the peritoneum is the seat of inflammation, and especially in no case where there is reason to believe there has occurred a hemorrhagic exudation.—*Centralblatt f. d. Med. Wissenschaften*, 1871, No. 30, from the *Prager Vierteljahrschr.*, CX. D. F. C.

21. *Pathological and Therapeutical Relations of Asthma, Angina Pectoris, and Gastralgia*.—Dr. F. E. ANSTIE advances (*Brit. Med. Journ.*, Nov. 11th, 1871) the proposition that asthma, angina pectoris, and gastralgia are essen-

tially dependent on neurosis of the vagus, which is of central origin, and in a large majority of cases is mainly or entirely due to inherited peculiarities of the central nervous system.

The following is offered by him as sufficient evidence, in his judgment, to make that hypothesis exceedingly probable:—

1. Inference from the known physiological functions of the vagus;
2. Evidence of the interchangeability of asthma, angina, and gastralgia, in the same individual;
3. Evidence of the pathological connection of these neuroses with neuralgia of the fifth nerve;
4. Evidence of the common dependence of asthma, angina, gastralgia, and neuralgia of the fifth, on peculiar inherited neurotic tendencies;
5. Evidence from the similarity of effects produced by certain remedies on all these maladies.

22. *Cases of Muscular Anæsthesia.*—Dr. ALFRED CARPENTER, of Croydon, read before the Medical Society of London (Nov. 13th) the following cases of this affection.

The patients were two intelligent young ladies, the daughters of a city gentleman. The elder, M. H.—, aged 28, of average good general health, every function of organic life being properly performed, all the natural functions of the body being in a healthy state, has been under the care of Dr. Carpenter for the last three years without material alteration, except a gradual but decided decrease in muscular power. Now she cannot rise from her chair without assistance, and the attempt, when made with aid, is clumsily and awkwardly performed; when she has gained the erect position, she staggers and is uncertain in her gait. The foot having been raised from the ground, there is an uncertainty as to where it will be placed, and it goes down with force, the heel first reaching the ground with a blow; as she cannot see the foot, she cannot tell how far it is from the ground. She can only retain the upright position as long as she knows assistance is at hand. She has more difficulty in starting than in continuing her movements. If she stands, and is told to shut her eyes and move, or if she is in the dark, she cannot remain upright, but at once falls. There is, however, no material loss of power, for the individual muscles are still strong, and some force is required to bend her joints against her will, though the muscular power is much less than it was two years ago. She can still lift a considerable weight, and carry it if her eyes are fixed upon it. Her sight is good, the pupils act equally and freely, and there is no defect in the co-ordinating power of the optic muscles; there is no congestion of the conjunctiva, no amblyopia; there is no want of association in the muscles of expression, but there is a slight effort required in speaking. There is clumsiness of movement in the upper extremity, for she cannot button a button or put in a shirt-stud unless she looks at it. She cannot use her fingers with any precision when out of sight, but can execute drawings of considerable merit. She used to play on the piano very well, but for the last five years the requisite movements have become unsteady and imperfect. Her memory and hearing are quite right. She never suffers from pain of any kind; there are no starts or jerks or muscular tremors. Urinary organs and secretion normal. She has a lateral curvature of the spine, with some flattening of the ribs on the right side, in the middle of the dorsal region. The distortion, which is considerable behind, does not alter the shape of the chest in front. There is no cutaneous anæsthesia; the neighbourhood of the joints is naturally sensitive. No numbness or formication is felt in the ordinary position; but if she sits up in bed with the knees drawn up before her, and a weight is kept on her knees, there is a feeling of numbness and deadened sensibility in the lower limbs. There is no marked reflex action, and no effect follows upon irritating the soles of the feet. She is able to localize sensations excited by the use of a pair of compasses in a normal manner, though the tactile sensibility of the lower extremities is, if anything, rather lessened. She is the second of eight children; her parents are healthy. At twelve her shoulder was said to have “grown out.” Dr. Little ordered a supine position, with no mental work and daily muscular ex-

ercise. Iron supports were used for four years. The catamenia appeared at fourteen; at eighteen the supports and treatment were omitted. Her general health was good, but the unsteadiness of gait continued, and, as she developed into a young woman, increased. She was placed under the care of a leading physician six years ago, kept perfectly recumbent for fourteen months, and treated with steel after that time without benefit. She came under Dr. Carpenter's care in 1868.

The condition of the younger sister, E. H—, aged 26, is very similar, but the symptoms are not so advanced, neither is she so helpless as her sister was three years ago. She has followed similar plans. The irregular gait was observed when she was fourteen. She is now well developed, with a healthy rosy face. When she speaks it is with hesitation, and as if she had something in her mouth. She is able to thread her needle, but could not touch the tip of her nose if her eyes were shut. She walks more nervously than her sister, and her progression is more sudden, amounting to a half run.

Dr. Carpenter summed up the points upon which he asked the opinion of the Fellows under four heads—viz.: (1) the cause of the development of the disease, (2) its nature, (3) its pathology, (4) its treatment. He referred the first point to some hereditary defect in nutrition of nerve matter—that the curvatures were coincident in point of time with development of disease as effects of a common cause, viz., degeneration of nerve matter; that they were not cases of locomotor ataxy at present. He combated the opinion of the translator of Trousseau's Clinical Medicine, that the pathognomonic sign of locomotor ataxy "was the peculiar deficiency in the power of co-ordinating voluntary movements," basing his objection on the absence of pain, of urinary disturbance, or ocular complication, as well as the fact implied by their youth and sex. The want of co-ordinating power being the most prominent symptom, he considered that in these cases the mischief was limited to the cord, and that there was no cerebellar complication, this idea being supported by the absence of subjective symptoms of brain disturbance and the superior intellectual power. He referred to the experiments of Claude Bernard, which prove that when the posterior roots of the spinal marrow are divided there is less co-ordinating power, that the harmony of movement is interfered with, and that Dr. Lockhart Clarke had distinctly made out that the posterior roots of the spinal cord were diseased in locomotor ataxy. The author concluded that in these cases, when the posterior column was diseased, the irritability of the muscles was found to be depressed, whilst their sensitiveness to pain was increased, and that electric currents excited violent pains. This was not the case with these patients; moderate galvanic currents were not distressing. The author also pointed out a typical case of locomotor ataxy, showing the different manner of progression as compared with the gait of these young ladies.

These cases were referred to a committee for examination, which, at a subsequent meeting (Nov. 20th), confirmed the original description of the cases, and stated that muscular contractility was greatly impaired, but not so the muscular sensibility.—*Lancet*, Dec. 2, 1871.

23. *Fatty Degeneration*.—K. VOIT has recently contributed a highly interesting paper on this subject, containing the results of his own experiments. The fatty degeneration of organs, occurring so frequently in disease, may be brought about in one of three ways: the fat which takes the place of tissues (and that fat does take the place of tissues we have confirmed by our own researches) might be derived from the fat in the food; it might be derived from other parts of the body which usually contain fat, as, for instance, the subcutaneous adipose tissue; or it might be generated in the cells of the affected organs by the splitting up of the albuminoids contained in these into nitrogenous and fatty substances. In the last case, the nitrogenous products of the metamorphosis of albuminoids—as, for instance, urea—would not be altered in amount, but the consumption of oxygen in the body would be diminished. Further, it is possible that the cells of the structure may become atrophied, and disorganization of the tissue ensue, from more albumen than usual being decomposed; more especially that which enters into the structure of the cells

themselves. Obviously, in this case the azotized constituents of the excretions would be increased, whilst the oxygen consumed would be either diminished or unaltered. The happy idea was conceived of giving phosphorus to dogs, after depriving them of food for several days—it being well known that fatty degeneration of many, if not all, the organs is produced by the administration of phosphorus—and this was found to be the case when food was withheld. As the animals ingested no food, the fat here could not have come from that source, nor from the adipose tissue of the body, for it was found that had all disappeared, and, in consequence of abstinence from food, the animals were emaciated before the administration of the drugs. Hence the fat must have been the result of metamorphosis of albumen in the organs themselves. A dog, placed in Voit's respiration apparatus, exhibited a diminution of 47 per cent. in the carbonic acid excreted, and of 45 per cent. in the oxygen absorbed, when phosphorus was administered. The excretion of urea, previously constant, rose after the ingestion of the phosphorus, and increased as the symptoms of poisoning became more severe. The experiments of Voit, with whom Bauer was associated, show that in phosphorus-poisoning fatty degeneration is due to two causes—the decreased oxidation of fat, and the increased production of fat by the metamorphosis of albumen. It is shown that this latter is independent of the supply of oxygen, and is dependent not so much on the oxidation of albumen as on the decomposition of the oxidized products of this substance. Voit and Bauer observed that no abnormal products are found in the urine except sarcocollactic acid in fatal cases, thus confirming the results of Schultzen and Riess. Leucin and tyrosin were looked for in vain in the urine of the poisoned dogs, although, as is known, these substances are abundant in cases of acute atrophy of the liver. They were found, however, in the liver, heart, and blood. It is thought very probable that leucin and tyrosin are among the first products of the decomposition of albumen, and that the nitrogenous bodies formed by the metamorphosis of albumen are changed into urea in the slighter cases of poisoning by phosphorus, whilst in the more severe cases the decomposition is imperfect, and the less simple products of decomposition are excreted.

Voit is of opinion that the main difference between acute atrophy and phosphorus-poisoning lies in the greater rapidity of degeneration which occurs in the former disease. Since the fat in fatty degeneration is solely that which has been formed in the organs, and either not oxidized or formed in too great quantity, it cannot be said when the diseased process begins and the healthy process ends. At first, the fat will be formed in its usual quantity from the circulating albumen, then from the stored-up albumen in the organs, and finally from the albumen forming an essential constituent of the cells; and thus the disorganization and destruction of the organs composed of these is brought about.—*Med. Times and Gazette*, Nov. 4, 1871.

24. *Leucæmic Deposits in the Heart*.—Dr. STEFFANI (*Centralblatt f. d. Med. Wissenschaften*, Aug. 12, 1871, from the *Revista Clinica*, Pavia, 1871) found, on the post-mortem examination of a patient, whose blood during lifetime had exhibited a large abnormal increase of the white blood corpuscles, very considerable intumescence of all the lymphatic glands throughout the body, as well as ulcerated tuberculi of the intestines, the same as those pictured by Virchow (*Geschwülste*, II. Fig. 182), and a large ulcerated tumour of similar character in the stomach. There were in the substance of the heart a multitude of leucæmic tuberculi varying in size from a little larger than a millimetre to one or one and a half centimetre. It would seem, from a microscopic examination, that in the neighbourhood of the leucæmic infiltration the convoluted and anastomosed character of the fibres of the cardiac muscles is the most strikingly developed. Until now, the present case is the only one of leucæmic tuberculi of the heart on record.

D. F. C.

25. *Pathological Changes in the Lymphatic Glands*.—According to the recent researches of C. G. MILANI, of Pavia (*Revista Clinica*, 1871, as quoted in the *Centralblatt f. d. Med. Wissenschaften*, No. 32, Aug. 1871), the pathological changes that occur in the lymphatic glands are as follows, namely:—

1. *The Pigmentary*.—The bronchial glands, where this change so commonly occurs, may be taken as an example. The pigment is deposited in the cells of the parenchyma of the gland. It differs from the proper lymph-corpuscles by its decidedly granular character; the granules being larger in size than the lymph-corpuscles and many-sided in shape. The cells in portions of the gland may be so uniformly clogged with the pigmentary granules as to present the appearance of a uniform black mass. The coloration penetrates also the lymph sinuses, the cells of the areolar tissue, etc.

2. *The Scrofulous*.—As examples of this change, greatly enlarged lymphatic glands excised from the neck of a boy were taken. The different sizes, and cut surface of the smaller, presented a different appearance from that of the largest. In the first the surface presented a homogeneous aspect, with fine pores visible to the naked eye. Under the microscope this porosity was shown to depend on a dilatation of the lymph sinuses. The bloodvessels of the gland were, also, somewhat enlarged. The cut surface of the largest tumours was not of homogeneous appearance, being beset with small ulcerated spots.

3. *The Lympho-Sarcomic*.—The increase of the bulk of the gland in this morbid condition is caused by an augmentation in bulk of the entire histological elements of the gland, so that it is not until at an advanced stage of the morbid change that its follicular structure is no longer apparent. The lymph-corpuscles exhibit an evident augmentation in their diameter, and the nuclei are larger than in the normal condition of the gland.

For the description given by Milani of the remaining morbid conditions of the lymphatic glands, namely, 4, *The Tubercular*, and 5, *The Sarcomatous*, we are referred to the original paper published in the *Studi fatti nel Laboratorio Patologico di Pavia*, 1870, S. A. 20. D. F. C.

26. *Suppuration of Muscles in Abdominal Typhus*.—Notwithstanding the greater attention which has recently been paid to the morbid changes which take place in the tissue of the voluntary muscles during attacks of abdominal typhus, the passage of this change into suppuration has been, it appears, but seldom observed. Dr. V. KRAFFT EBING gives an account, in the *Arch. f. Klin. Med.*, VIII., of two cases. One, a convalescent from typhoid fever, on the 31st day from his sickness, was suddenly attacked with a painful swelling of the right rectus abdominis muscle. Evident fluctuation was detected on the 41st day. On the 43d a careful incision was made, which gave discharge to a large quantity of pus tinged with blood. For a long time after the muscle remained tensely distended, and, as it were, infiltrated; and so continued to the 80th day. The incision had been entirely closed since the 61st day. The second case was that of a typhoid patient who, on the 41st day of the fever, was attacked with fatal croupous pneumonia. The entire left psoas muscle was found to be converted into a doughy tumour, from which there escaped pus mixed with blood of the consistence of cream. A microscopic examination of the neighbouring muscular structure, which gave to the naked eye a grayish colour, showed the fibrillæ to be infiltrated with a very friable, dull-looking matter, and only in part retaining their normal appearance and relations.—*Centralblatt f. d. Med. Wissenschaften*, No. 41, Oct, 1871. D. F. C.

27. *Hæmatoma Scarlatinosum*.—During the prevalence of an epidemic of scarlet fever in 1869, Dr. HUBER met with a case of hæmatoma in the neck of a boy six years old, seated at the left side of the neck, and by inclining the head to the opposite side it presented an oval swelling of the size of a hen's egg, and showing, upon palpation, evident fluctuation. The tumour had existed since the 10th day from the commencement of the attack of scarlatina. In two days after the application of emollient poultices, it quickly enlarged in size. Believing it to be a simple abscess, Dr. H. opened it and gave discharge to about a handful of tolerably firm coagula of blood, upon which followed a very profuse flow of arterial blood, which, finally, was arrested by compressing with the finger the orifice in the artery. Still, the loss of blood was so great that the already existing debility of the patient was increased to the extent of inducing a fatal collapse. A similar case was met with by another physician. In the

opinion of Dr. H. the bloody tumour in the case he describes is dependent upon a phlegmonous or diphtheritic inflammation of the cellular tissue of the part which extends from the tissues of the throat to the neighbouring arterial ramification. From its first appearance, hæmatoma may be distinguished from abscess, 1st, by its rapid increase in size, relative to the short time that elapses from that when the swelling became suddenly perceptible; 2d, by the relative hardness of the swelling, with an indistinct sense of fluctuation. If the diagnosis is certainly established, the application of ice may arrest the further increase of the swelling; but should this be unsuccessful, and a state of general acute anæmia set in, the application of a ligature to the artery will be required.—*Centralblatt f. d. Med. Wissenschaften*, Oct. 1871, from *Deutsch. Arch. f. Klin. Med.*, VIII. D. F. C.

28. *Cutaneous Neuropathic Papilloma*.—C. GERHARDT (*Jahrbuch f. Kinderheilkunde*, N. F., IV.) has had an opportunity of observing two cases of congenital cutaneous papilloma, similar to the disease described by Beigel as the *papilloma area elevatum*, being, unquestionably, a disease of the skin connected with some disturbance of the nervous system. The first of Dr. G.'s cases occurred in a child six years old, subject to epileptic fits. The papilloma were partly of the same colour—red—as the skin, and partly dark or black. They covered the greater portion of the surface of the right side of the body; their line of demarcation, in front, was the centre of the sternum and linea alba; posteriorly, the spinal processes of the vertebræ. There were, also, numerous annular clusters on the right arm and radial face of the forearm; on the lower extremities it was on the left side, the papilloma were present, but still not extending in any case beyond the median line. The teeth on the left side were smaller than those on the right, and of irregular shape. The second case was that of a labouring man, sixty years of age, who complained of a pain in the right axilla, the occurrence of which induced him to seek medical advice in respect to a cutaneous affection under which he had laboured since his birth. In this case there were papilloma confined to the right side of the body, and found chiefly at the axilla, the intercostal spaces, and the inner side of the arm, and thigh, the penis, and scrotum. The eruption was pigmentous, and had brought about a discoloration of the skin of a bright brownish-yellow to a dark brown, almost black, hue. According to the statement of the patient, he experienced from time to time, about say every four weeks, a copious perspiration, with intense itching of the axilla. To abate the latter, cloths wet with lead-water were applied, and a large number of the papilloma removed by the forceps and scissors. With the exception of a high grade of dullness and of inertness, no other deviation from the normal condition of the nervous system was noticeable. Both the above cases were alike in being congenital, the eruption occupying only one-half the body and pigmentous. The arrangement of the eruptions induced the belief, in the first case, that they were under the influence of some disturbed condition of the basilar lobes of the brain. In the second case the distribution of the eruptions indicated the controlling influence of the medulla spinalis.—*Centralblatt f. d. Med. Wissenschaften*, Nov. 1871. D. F. C.

29. *The Blood and Urine in Chyluria*.—Prof. HOPPE-SEYLER has recently been fortunate enough to obtain and analyze, simultaneously, specimens of both the blood and urine of a female patient of the late Professor Niemeyer, suffering from chyluria, and thus to contribute to our scanty knowledge of the pathology of this obscure disease. The urine had a milky-white appearance, and contained 7.2 parts per 1000 of fat. The blood yielded 41.3 per cent. of serum, of a yellowish colour, barely turbid, and not in the least milky. Indeed, there was perfect coagulation of the blood, and the serum was not of the same fatty nature as the urine. The analytical results exhibit a smaller proportion of albuminoids than is usual. This, Hoppe-Seyler suggests, may be owing to loss through the urine, to dilution with lymph in consequence of the manner in which the blood was drawn (by cupping), or to both these causes. The serum contained a high percentage of fat, whilst the blood-corpuscles did not appear to contain fat in larger proportion than normal corpuscles; nor were the red

corpuscles and the colouring matter of the blood (hæmoglobin) diminished. Since the whole blood contained 1.7 per 1000 fat, the serum 35.9 per 1000, and the urine 7.2 per 1000, Hoppe-Seyler thinks it is evident that transudation is not the sole source of fat in the urine, but that a certain amount of the transuded fluid, deprived of or poorer in fat, passes back either into the lymph or into the bloodvessels. We may add a third, but less probable, alternative—that fat is actually formed in the kidneys.—*Med. Times and Gaz.*, Sept. 30, 1870, from *Med. Chem. Unters.*, 1871, p. 551.

30. *Hemorrhage from the Kidneys in Young Infants.*—Prompted by the observations of Beckmann, showing that infants, during the first two months of their lives, after a severe attack of diarrhœa, are liable to the occurrence of thrombosis of the renal vessels, with extravasation of blood into the substance of the kidneys, POLLAK (*Wien. Med. Presse*, No. 18, 1871) studied the pathognomonic symptoms during life, of this form of hemorrhage in twelve cases, and thus describes them. Before there is any indication of the presence of blood in the urine, the mucous surfaces assume a pale, dull, bluish hue, and the skin an olive-green, which, according to M. Pollak, is due to a transformation of the blood into *hæmatoidin*. The urine, very dense, soon assumes a dark, clouded appearance; it contains a small amount of albumen, and deposits a sediment composed of blood-corpuscles and renal epithelial scales. At the end of from twelve to twenty-four hours the urine is found to contain a considerable amount of bloody material, which is readily made out to be composed chiefly of *hæmatin* and *hæmin*. In order to prevent these cases from being confounded with those of hemorrhage from the urinary bladder, a careful microscopic examination of the urinary sediment should never be neglected. The general symptoms in infantile renal hemorrhage are great restlessness, inability to suck at the mother's breast, painful sensation when pressure is made over the region of the kidneys. None of the patients were six weeks old. Some, previously to the occurrence of the ante-hemorrhagic intestinal catarrh, were very robust, and to all appearance in the enjoyment of entire health. The cases of renal hemorrhage very generally terminated fatally. In two recovery ensued, the blood disappearing from the urine in from three to four days. In opposition to the observations of Beckmann, Dr. P., while in all things else his observations were confirmatory of those of the former, found, upon a post-mortem examination, that the parenchyma of the kidneys was not the seat of disease. In respect to treatment, all that can be done is to endeavour to sustain the infant's strength by giving it its mother's milk, and, at the same time, a decoction of bark. D. F. C.

31. *Ether Spray in Diagnosis.*—Dr. RICHARDSON, at the Medical Society of London, recently explained a new application of ether spray, which he had for over two years past employed—viz., for the purpose of diagnosis in some forms of nervous disorder. He had noticed from the first use of the spray that the period required for producing freezing of the surface of the body varies with the condition of the patient, the weak and the aged being much more easily influenced than the robust. He therefore has been led to the practice of using the spray as a test of vascular tonicity of parts of the body, and inferentially of the nervous control over the vessels. In the case which had led to these observations—a case of obscure paralysis, brought before the Medical Society by Dr. Alfred Carpenter, of Croydon, on which a committee, consisting of Drs. Richardson, Lockhart Clarke, Broadbent, Hughlings-Jackson, Carpenter, and Mr. Brudenell Carter had drawn up a report for the Society—this method of employing ether spray had been adopted, with the effect of finding that in certain of the paralyzed parts the freezing of the tissues could be established in from two to three seconds, while in a healthy subject, and in the same subject on other parts of the body, from eight to nine seconds of time were required, the ether used and the external conditions being the same. The practice is suggestive of extensive application in estimating what, in the absence of a better term, we may still venture to call “the vital power” of different individuals or of the same individual, generally and locally, under various conditions of disease.—*Med. Times and Gaz.*, Nov. 25, 1871.

32. *Real Cause of the supposed Rheumatic Paralysis of the Radial Nerve.*—Dr. PANAS, Surgeon to the Hôpital St. Louis, read a memoir on this subject before the Academy of Medicine (Nov. 21, 1871). The following are his conclusions:—

1st. Generally, not to say always, radial paralysis is caused by a temporary compression of the nerve.

2d. The study of the causes, as well as the symptoms of this paralysis, perfectly accords with what we know regarding slight traumatic paralysis, as it is called, of mixed nerves.

3d. The compression, which almost always occurs during sleep, invariably implicates the same portion of the nervous trunk, which anatomy and cadaveric experimentation satisfactorily explains.

4th. Without denying that the paralysis may be produced by cold, since, strictly speaking, two or three cases may be quoted as probably referable to that cause, we think it should be regarded as only an exceptional one, and, for our part, we have never yet met with an example of it.—*L'Union Médicale*, Nov. 23, 1871.

33. *Marasmus an Occasional Consequence of Enteric Fever.*—Dr. T. CLIFFORD ALBUTT remarks (*Brit. Med. Journ.*, Nov. 11, 1871) that we not uncommonly meet in practice with cases of general wasting which do not tend quickly to death, but which, on the other hand, are almost incurable. We can find no organic disease, but the patient loses flesh and turns sallow, until, when stripped, he seems almost a living skeleton. In this state, he may survive many years, unfit for exertion; eating food and getting no good from it.

In writing the notes of such patients' previous history, it happened, he says, in more than one instance, the symptoms seemed to date from a preceding attack of enteric fever, and he is rather surprised, on turning over the leading treatises on enteric fever, to find that the chance of so severe an abdominal disease permanently affecting nutrition has not presented itself to the writers; nor do I ever remember to have heard this disease suspected of doing more than temporary mischief. But when we look at the parts affected by this fever, when we remember how severely it falls upon a large part of the absorbent surface of the intestine, and upon the glands of the mesentery, it would seem likely, *a priori*, that in some instances absorption might be permanently interfered with.

Dr. A. presents brief accounts of five cases which have occurred in his practice, and observes that "they all agree in these points: (1) in wasting, which is not due apparently to febrile action or to organic disease, but—as it would seem—to defective nutrition; and (2) in the history of a previous illness, which fell with severity upon the intestinal canal. It appears, further, that the innutrition consists rather in the lack of digestive power over fats. There is no tendency to absolute starvation; but, in the subcutaneous tissue, there is an utter absence of fat, and, so far as we can tell, all parts and organs have lost their adipose investment. Stomach or meat digestion, on the other hand, seems fair, and many starchy substances likewise seem to be fairly assimilated. In all cases, light puddings, corn-flour, arrowroot, and the like, seem to have been digested, not only with impunity, but with advantage. In the cases where I could examine the stools, I found large pasty evacuations, but no separated fat—no diarrhoea adiposa; so that I assumed that the biliary and pancreatic secretions were duly poured into the intestine, and that they duly emulsified the fats. But the fats, nevertheless, if taken, turned rancid in the intestine, causing so-called biliousness, and, moreover, they failed to find their way into the circulation. It seemed, therefore, likely that the fault lay in the machinery of absorption. That surface of the tube which is devoted to this purpose suffers greatly from the ulcerative process in enteric fever; and if this be partial in its distribution in the bowel, such cannot be the case at any rate with the associated system of mesenteric tubes and glands, all of which are involved in irritative action, and are likely, in extreme cases, to suffer permanent degeneration in their texture. If we feed a rat on tallow, and then open the abdomen, we shall see that the whole of the mesenteric system is full of finely separated and emul-

sified oil-particles on their way into the blood; and this simple experiment will demonstrate to us the probable result of blocking up this system by cicatrization or destroying it by inflammation. The slow and often incomplete convalescences from enteric fever, and the liability of its victims to subsequent disease, such as phthisis, are well known. Tubercle in these patients may arise from absorption of cheesy matter from the mesenteric glands into the blood-current; but catarrhal phthisis, and other like sequelæ, may be due to the imperfect restoration of the fat-collecting machinery. It is to this cause of incomplete convalescence, of marasmus, or of chronic disease, as common consequences of enteric fever, that I wish to-day to call the attention of clinical observers.

34. *Dr. Geo. Johnson's Theory of Cholera.*—We have repeatedly expressed our disbelief in this theory, but as Sir Thomas Watson has, in the last edition of his treatise on the practice of medicine, given the weight of his sanction to its correctness, it may be allowable to recur once more to the subject.

Mr. WM. SEDGWICK, in, as it seems to us, a convincing article (*Lancet*, Oct. 7, and Nov. 11, 1871), has exposed the radical error of Dr. Johnson's theory, and concludes his paper with the following remarks:—

“As the chief importance of theories in disease is derived from the extent of their influence on practice, it has been necessary to notice somewhat more fully than would otherwise be the case some of the leading errors in this particular theory of cholera, in consequence of the attempts which have been made, through the medium of the non-medical press, to popularize the cathartic treatment which has been founded on it, and which has failed to gain the approval of the medical profession. The absence of any allusion in the late publications on the Pathology and Treatment of Cholera, by Sir Thomas Watson and Dr. Johnson, to the results of this treatment at any of the metropolitan hospitals, cannot fail to be regarded as a very significant fact. For, during the last epidemic of the disease in 1866, all the cholera patients admitted into King's College Hospital were under the immediate supervision of Dr. Johnson himself, and it is well known that the statistics of treatment on this occasion, showing a mortality of about 62 per cent. (*Lancet*, Nov. 17, 1866, and Aug. 19, 1871), are too unfavourable for quotation. In the University College Hospital, during the preceding epidemic of cholera in 1854, eight of the patients were treated with castor oil; but as only one survived, the treatment in consequence was changed. And the committee appointed during this epidemic by the Medical Council of the General Board of Health, to consider and report upon the treatment of cholera by castor oil, ascertained ‘that in eighty-nine cases of cholera treated by fourteen different practitioners with castor oil, on the plan recommended by Dr. Johnson, sixty-eight were fatal, recovery having occurred in only fifteen cases, while the six remaining cases were still under medical treatment.’ (*Med. Times and Gaz.*, Sept. 1854.) Similar, if not even still more disastrous, results have attended this practice in India; and it would perhaps be impossible to cite a more painful illustration of the failure of the cathartic treatment of cholera than that which is derived from the experience of Dr. Macnamara (*A Treatise on Asiatic Cholera*, pp. 460, 461, 1870), who ‘was acting as house-physician to King's College Hospital in 1854, when (during the decline of the epidemic) Dr. G. Johnson was treating his cholera patients on eliminative principles.’ Having sailed for India ‘full of confidence and hope in castor oil,’ Dr. Macnamara was left, he informs us, in the following year (1855) in sole charge of a field hospital at Bhaugulpore during a severe outbreak of cholera. There he ‘went boldly to work with castor oil (both among the Europeans and natives under his care); but it absolutely and completely failed, and the mortality from the disease was fearful.’ Notwithstanding this unfavourable result, he again tried it on several occasions, but subsequently the ‘castor oil method’ was abandoned as ‘worthless.’ Since, therefore, the cathartic treatment, which has been founded on this theory, has signally failed, it can no longer be of any avail, in the struggle to support the theory itself, to act the part of a master of fence, or to be prematurely praised as its ‘triumphant advocate;’ for the victory which has been claimed was virtually lost when the showy weapons relied on for defence had been proved to be unworthy of trust, and

when the skill which might have been turned to good account had been wasted on a series of subtle feints, which may, perhaps, have delayed, but which could not ultimately avert, defeat."

35. *Urethral Rheumatism*.—Mr. THOMAS BOND read a paper before the Medical Society of London, on the so-called urethral rheumatism. This was not the effect of any specific poison or constitutional diathesis; and it often occurred quite independently of gonorrhœa, as well as of very gouty or rheumatic predisposition. It was dependent on a local condition of the urethra; and he called it urethral rheumatism as being the most convenient name. It occurred in men of an anæmic or weakly condition, or when gonorrhœa had been treated too long by copaiba or purgatives. There was a subacute inflammation of the synovial membranes and of the fibrous tissues about the ankles, heels, and balls of the great toes; it gradually affected the shoulders, elbows, and hands. Congestion of the sclerotic was present; and the health suffered severely. Exacerbation took place, with pains in the loins in the morning, followed by profuse perspiration, with loss of appetite and of sleep. The urine was scanty, the tongue coated, the face hectic. The limbs often became permanently contracted, unless great skill and care were used in the treatment. The urethral discharge varied from profuse muco-purulent discharge to the slightest gleet fluid. The disease was not diathetic but septæmic; in fact, a chronic pyæmia. He believed that the altered state of the blood was kept up by the daily absorption of the morbid materials from the urethra. As soon as the supply of the *materies morbi* from absorption was stopped, the blood gradually eliminated the poison and returned to its healthy state. The peculiar immunity of women was owing to the greater thickness and coarseness of the vaginal epithelium than that of the male urethra, and to their not being treated by specifics and antiphlogistics. If the disease were a rheumatic urethritis, and not a urethral rheumatism, why should not women be equally liable with men? Antiphlogistics, copaiba, and iodide of potassium did no good, but rather harm. The proper treatment was full diet, with steel and quinia wine, and porter, and lastly injection, until the discharge was completely cured. A very good injection was tannin and opium with water.—*British Med. Journ.*, Nov. 25, 1871.

36. *Therapeutics of the Present Day*.—The *Practitioner* for November last contains some interesting observations on this subject by Dr. HENRY KENNEDY, of Dublin. The leading points to which he calls attention are the following:—

1. That the proper position the physician holds, in reference to the administration of drugs, is, that he treats, and, with the assistance of nature, cures disease by their means.

2. That in our endeavours to improve therapeutics, too much must not be expected, inasmuch as there is a limit beyond which we cannot pass, and this limit is and must remain far short of certainty.

3. That if we ignore the labours of our predecessors we will commit a grave mistake; for they have left after them a mass of therapeutic facts which it would not be possible, even at the present day, to excel; and, therefore, our labours should begin where theirs ended.

4. That the physiological dose of each drug is the proper one to use, as it is only then its therapeutic virtues can be ascertained.

5. That at present the doses of many drugs are much smaller than our predecessors used; and, therefore, the results in our hands cannot but be unsatisfactory.

6. That our predecessors, wherever it was possible, used medicines in the form of powder, which had the great advantage of being free from any risk likely to be caused by any other mode of preparation.

7. That experiments thus made must lead to more definite results than any made with other preparations of the same drugs.

8. That compound medicines, like the tincture of perchloride of iron, should be recognized as such, and not as simple drugs.

9. That the use of diluents is a very important principle to recognize in treating disease.

10. That a knowledge of human physiology is essential to give anything of a scientific status to our therapeutics.

37. *Hydrochlorate of Berberin in Splenic Enlargement resulting from Malaria*.—Sig. PAOLO MACHIAVELLI experimented with this salt, first upon guinea-pigs, into which he repeatedly injected hypodermically from three to fifteen grains of the article. The animals remained well, and after death no pathological appearances were presented beyond slight diminution in the size of the capsule, and thickening of the capsule. After having thus proved its harmlessness in regard to the organic functions, he commenced a series of experiments with it on man, commencing with the same doses, and gradually increasing it till sixteen grains were taken in the twenty-four hours. The number of patients was fifty-one, the greater number of whom were soldiers, who, in consequence of exposure to marsh miasma, were suffering from enlargement of the spleen. Amongst these, thirty-four were cured, sixteen were improved, and one died from miliary tuberculosis. In several of them the enlargement of the spleen was accompanied by ascites, and in most of them the usual treatment, especially by means of quinia, had been tried in vain. Signor Machiavelli takes the opportunity of communicating the results of his pathological investigations on the nature of the tumour in these cases, and states that he finds a vast accumulation of white blood corpuscles rather shrivelled, and in transitional states, or in actual regressive conversion into pigment granules. These conditions appear to show, he thinks, that the malarial poison exercises an injurious influence on the contractility of the elastic tissue of the capsule, and upon the trabeculæ by paralyzing or diminishing the interchange of material taking place between the blood and the splenic pulp and corpuscles. The physiological action of the hydrochlorate of berberin appears, therefore, to be that it acts on the elastic elements of the capsule and trabeculæ, to which it restores their lost tone, and consequently re-establishes the physiological pressure, and the chemical interchange between the splenic pulp and the blood.—*Practitioner*, Nov. 1871, from *Giornale Veneto*.

38. *Ipecacuanha given in Enema for Dysentery*.—Dr. CHARLES MOORE JESSOP extols (*Indian Medical Gazette*, July, 1871) the efficacy of ipecacuanha given in enema for the cure of dysentery. He gives ten grains of the powder with half a drachm of laudanum in two ounces of decoction of arrowroot, or mucilage, three times a day; when the symptoms abate, twice a day, and, finally, once a day.

In the No. of the same journal for Sept., Surgeon J. F. BAXTER relates the following case confirmatory of Jessop's statement:—

"A young married lady who had suffered from a recent attack of acute dysentery, having had one or two relapses in the space of a few months, came under my observation in the autumn of last year; she was then passing small quantities of blood five or six times daily, but declined to resort to medicine; towards the close of the year, however, she had another sharp attack, and I was asked to see her.

"I prescribed five grains of ipecacuanha, with a small quantity of opium, in pills, which were shortly afterwards rejected by the stomach. I reduced the quantity to two grains, with the same result. I then tried every remedy I could think of, with a view to make the stomach tolerant of the drug, but without success.

"The patient suffered great pain, was constantly on the move to and from the bath-room, was tormented with persistent and severe straining, and as nothing remained on her stomach, I felt it not unlikely that I should lose her; the thought, however, occurred to me to administer ipecacuanha in enemas, and accordingly I gave two scruples of ipecacuanha wine, fifteen minims of tincture of opium, and one ounce of thin arrowroot, in enema. This gave her relief and sleep for about four hours—the first she had had for several days. I continued the treatment, and the following day she was considerably improved,

and in four days more she was quite free from pain, purging, or blood; she rapidly recovered, and although she had a slight relapse some months afterwards, I have since heard that she is now quite well."

39. *Sulphate of Iron as a Local Application in Phlegmasia Dolens.*—Dr. R. W. CREIGHTON speaks favourably (*British Med. Journal*, Oct. 21, 1871) of the efficacy of sulphate of iron as an external application in phlegmasia dolens.

"In recent cases," he says, "it is best employed in the form of lotion (twenty to thirty grains to an ounce of water), applied as hot as the patient can comfortably bear it. Much trouble is avoided, and the constant saturation of the skin with the lotion secured, by using spongio-piline, fastened loosely by tapes round the limb.

"All the cases which I have so treated—five or six in number—have made good and rapid recoveries; and in one only, which was not seen for several days after the disease commenced, was there any great amount of hardness left in the superficial venous trunks at the end of ten or twelve days. In this case, the application of equal parts of belladonna and iodide of potassium ointments was effectual in dispersing it. In all the cases, after the bowels had been freely acted on, the muriated tincture of iron, either alone or combined with quinia, was given internally.

"The rapid introduction of waste material into the blood during the puerperal state affords, I believe, some explanation of the action of sulphate of iron externally, and of the muriated tincture internally, in cases of phlegmasia dolens."

40. *Antiseptic Treatment of Smallpox.*—Dr. A. E. SANSOM remarks: "The double principle of the antiseptic method of treatment is the arrest of the disease-process in the individual, and the prevention of spread to the community. The same class of agents which common experience declares to be disinfectants, can be administered to the living body with at least a fair hope of their accomplishing that destruction of disease-germs which they accomplish externally to it. Carbolic acid has been administered by many, especially by French, physicians. But I believe that, in many cases, carbolic acid and its compounds can be advantageously replaced by other antiseptics—especially in those wherein head-symptoms are prominent. I think it very probable that we shall find certain antiseptics are best suited to the treatment of certain diseases; in scarlatina, diphtheria, and all zymotic ailments in which the throat is involved, I have found the sulphocarbonates specially valuable. In his successful cases of variola, Dr. Hjaltelin employed the ordinary sulphurous acid in fluidrachm doses every third hour. I have rather inclined to the use of the sulphites recommended by Polli—they are powerful and direct antiseptics, easily administered and readily absorbed. I believe that in this country the error has been made of administering them in insufficient doses, or else of employing the hyposulphites—purgative salts, and far less efficient as antiseptics.

"The external treatment of the pustules is most important. No agent seems to me so valuable as carbolic acid; its application in the pure form to the summit of each pustule is perfectly painless. [Dr. Sansom employs for this purpose a fine camel's-hair pencil, dipped in strong liquid carbolic acid, taking care not to allow any to reach the sound skin, and then orders a solution of one part of carbolic acid in three of olive oil to be applied over the individual pustules night and morning.] It is not necessary to touch each individually at one visit, but at subsequent times to touch those which have been omitted previously. I have found nothing so effectually disguise the odour of carbolic acid, without impairing its antiseptic efficacy, as oil of wild thyme (*oleum origani*). Thymic acid is itself a well-known antiseptic. The effect of the application of the carbolic acid is at once apparent; the pustule first becomes white, and then dries up. The carbolic oil afterwards applied, penetrates amongst the purulent crusts, and is far more efficient than any watery application. The general surface of the body may likewise be sponged with any soluble antiseptic. I believe the coal-tar soap to be very valuable for washing the surface of the body. By the antiseptic method of treatment, external as

well as internal, the patient is really disinfected from the onset of his malady, and the benefits are manifest alike upon himself and upon those subject to the contagion."—*British Med. Journ.*, Nov. 25, 1871.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

41. *Transfusion*.—Dr. de BELINA, of Heidelberg, ascribes, very justly, the failure of transfusion of blood, and the discredit into which it has fallen in France, mainly to the employment of blood which has not been defibrinated, to not determining the quantity of blood to be employed, and finally to the imperfection of the instruments and of the operative methods employed.

The use of blood, not defibrinated, inevitably results in its coagulation in the tubes of the instrument, hence the transfusion becomes impossible, or clots may be introduced into the vein, producing a dangerous or even fatal result. If the clots be large, obstruction of the pulmonary artery and immediate death may result, and if death be not immediate, it may result from an embolus produced by the deposit of clots in some portion of the circulatory apparatus.

Fibrin is not an essential part of the blood and it may be removed without inconvenience; and, further, the process by which the blood is defibrinated improves it by saturating it with oxygen and by removing the carbonic acid.

As to the quantity, either too much is often employed or too much at a time, whence results afflux to the heart, consecutive paralysis, or at least dangerous congestions in different organs.

A proper apparatus for transfusion should fulfil the following conditions:—

1st. It should be capable of being kept perfectly clean.

2d. It should have sufficient capacity to contain the required amount of blood, and it should be easily used.

3d. The blood in it should be maintained of the desired temperature.

4th. The introduction of bubbles of air into the vein should be impossible.—*Revue de Thérap.*, Oct. 15, 1871, from *Recueil de Méd. Vet.*

42. *Arterial Transfusion of Blood*.—Professor HUETER recorded some time ago a case of poisoning with carbonic oxide, in which he preserved the life of the patient by transfusion. More recently, in the *Centralblatt*, he has recommended the same, on the ground of the successful issue of three cases where healthy blood was injected to remove the symptoms accompanying intense septicæmia. Hueter pursued in these cases not the usual plan of injecting venous blood into a vein, but that of injecting the venous blood of a healthy man into the *artery* of the invalid. He performs the operation in the following way. During the defibrination of the blood by beating and filtration through a piece of fine muslin by assistants, he exposes the radial artery or the tibialis posticus, above the malleolus internus, the latter being just as easy to find as the former. Any slight hemorrhage is carefully arrested, and a very small opening is made in the sheath of the artery, which is separated from the adventitia; a sound is then pushed under the artery, and moved hither and thither, till about two and a half centimetres of the artery are isolated. Four pieces of strong silk are now passed beneath the vessel, of which one forms a reserve ligature. The silk nearest to the heart is now tied tightly, so as to prevent all entrance into the vessel of blood coming from the heart. The injection syringe is now filled, and the lowermost silk slightly pulled, so as to stretch the vessel. An opening is now made in its upper part, by cutting it about half through transversely with scissors. The canula is introduced, and secured by the third thread. The tension hitherto kept up on the lowermost silk is now relaxed, and the injection begun to be forced in. When the injection is completed, the lowermost thread is tightened, and the piece of artery between the two ligatures excised. The wound is simply dressed. The principal difficulties of the operation are its

complexity, and the necessity that exists of maintaining a considerable pressure on the piston to overcome the cardiac pressure. On the latter ground Hueter recommends the employment of Mosler's injection-syringe, in which the piston works with a screw. In Hueter's opinion, the objections are far outweighed by the advantages which arterial transfusion affords. One of these advantages is, that the blood reaches the heart more slowly, and with greater steadiness and regularity, than by venous transfusion. He regards the injection of small quantities (two, three, or four ounces) as useless, in most instances from eight ounces to one pound being requisite. But if so large a quantity be suddenly thrown upon the heart, as occurs in injection by the veins, a fatal arrest of its activity may occur. It must be remembered, also, that in consequence of the bleeding prior to the injection, as much unhealthy blood is removed as good is introduced from the system. Another advantage attendant on the arterial injection is security against the introduction of air, any small quantities that may be introduced being rapidly absorbed during the passage of the blood through the capillaries. By this method, also, all danger of phlebitis is avoided, which in many instances, when transfusion of the veins would otherwise have proved successful, has led to the death of the patient. It has not yet been ascertained whether the contact of a large quantity of blood, rendered arterial by whipping with the waste of the right heart, is of any real advantage. In the mode of transfusion by the arteries, the blood necessarily becomes venous during its passage through the capillaries. In conclusion, Mr. Hueter observes that transfusion, whether performed through the veins or arteries, constitutes a weapon against disease which can in no other way be contested, and points out the excellent results we may anticipate from its employment.—*The Practitioner*, Nov. 1871, from *Aerztliches Literaturblatt*, No. 6, 1871.

43. *Lesions in Remote Organs from Injuries and Diseases of Brain.*—In a series of experiments by Brown-Séquard recently made public, it is shown that by crushing or incising the pons Varolii, there took place on the side of the body opposite to that side of the pons on which the injury was inflicted, ecchymosis of the pleura or pulmonary apoplexy. Dr. FLEISCHMANN has ascertained that precisely the same thing occurs also in pathological lesions of the brain. Thus, when, upon post-mortem examination, he has met with a tubercular deposit in the cerebrum, the tubercula quadrigemina, the optic thalamus, or the pons, there was a coincident hemorrhagic condition of the pleura, pericardium, and surface of the kidneys, and in one case clusters of emphysematous points in both lungs. It is especially worthy of note that in one case in which the tubercular deposit was confined chiefly to the right side of the pons, the pleura covering the left lung was beset with numerous hemorrhagic points, in size from that of a pin's head to a lint seed. How far the facts related are to be explained by a sympathetic action, Dr. F. considers to be, in the present state of our knowledge, at least, uncertain.—*Centralblatt f. d. Med. Wissenschaften*, 1871, No. 28, from *Jahrbuch f. Kinderheilk.*, IV. 1871. D. F. C.

44. *Physiology and Pathology of the Knee-Joint.*—R. DELITSCH remarks (*Archiv. d. Heilkunde*, XI. 1870) that Bonnet's experiments made by forcibly injecting a fluid into the cavity of a joint, showed that when such injection is made, no matter in whatever position the joint may be, it will always assume one and the same angle, and one in which the dimensions of the articular cavity are developed to their largest extent, and this position, especially in reference to the knee-joint, is a half flexed one. Let this position be changed, after the injection into the articular cavity of the knee-joint is made, a portion of the injection escapes, or is forced, by the tearing of the capsular membrane, or through the perforation made in the latter, into the blind sac above the patella, so as to become diffused between the femur and quadriceps muscle. Bonnet explains the cause of the flexion of the knee produced by the injection into its cavity, by the interposition of the injected fluid between the articular surfaces of the three bones composing the joint: separating the surface of the femur from that of the tibia one to three mm., and that of the femur from that of the patella about one-third of an inch. Dr. D. repeated the experiments of Bonnet

with every possible variation of which they were capable, in order to determine the relationships in cubic centimetres between the degree of capacity of the synovial cavity and the amount of flexion of the joint. The following are the results of those experiments: 1. The knee-joint exhibits with degrees of flexion, in different individuals, a very great difference in the extent of synovial space, especially according as the communication between the synovial cavity and one or other of the muciferous bursæ is free or interrupted. The muciferous bursæ referred to, lie, one between the tendon of the quadriceps muscle and the uppermost portion of the upper edge or the fold of the synovial capsule; another between the gastrocnemius internus, the semi-membranosus muscles, and the articular capsule, and often a third occurs above the first named one. 2. The extent of the synovial space reaches its maximum at a particular grade of flexion of the joint, having a medium angle of between 20° and 30° . In opposition to the statement of Bonnet, Dr. D. finds that the largest extent of synovial space is not attained by a half-flexed position, but exists at the commencement of flexure. 3. The maximum of flexure gives the minimum extent of synovial space. Hence in the treatment of penetrating wounds of the knee-joint, contrary to the directions of Bonnet, the extended position of the limb is not that which is adapted to diminish the size of the capsular cavity. All the pathological conditions, like acute articular dropsy of the knee, have part in the conditions exposed by the above experiments. It is usual for patients to assume and maintain the flexed position of the articulation whenever pain is experienced from an affection of the joint, but not to avoid the pressure upon the articulating surfaces of the bones, as Bonnet supposes; on the contrary, as Dr. D. has shown, there is coincident disease of the lateral ligaments, and as when they are put upon the stretch they cause pain, the flexed position of the limb is the one in which the pain from the diseased ligaments is the least. It is, consequently, that into which the patient, almost instinctively, places the limb.

In regard to the management of dropsy of the knee-joint, it is recommended by Goyrand to open, by a subcutaneous incision, the articular capsule, and by subsequent compression of the entire circumference of the knee-joint to get rid of the water effused into the surrounding cellular tissue, from which plan he has obtained, he reports, the best results. Bonnet had already pursued the plan of compression without resorting to a previous opening into the cavity of the joint. Dr. D. favours the plan of Goyrand. The opening into the synovial cavity can be accomplished without causing hemorrhage, provided the joint is fully flexed, so as to reduce the extent of its cavity to its minimum.—*Centralblatt f. d. Med. Wissenschaften*, 1870, No. 50. D. F. C.

45. *Treatment of Serous Collections by Injections of Alcohol*.—M. MONOD read an interesting paper on this subject before the Surgical Society of Paris, Oct. 4, 1871. He uses the alcohol at 40° , in very small quantity, about one gramme, either pure or mixed with an equal quantity of water. M. M. commences by puncturing the tumour and then withdrawing about a spoonful of its contents; he then injects the alcohol. This operation may be repeated once or twice, if necessary, at variable intervals.

M. M. has thus successfully treated a serous cyst of the neck, simulating goitre, and three cases of hydrocele. In three cases of hydrocele the injection of this small quantity of alcohol caused the absorption of the serous collection and a complete cure without exciting inflammation of the tunica vaginalis, and without it being necessary for the patient to remain in bed.

M. M. thinks that this method of treatment may be advantageously resorted to in hydrarthroses, ovarian cysts, hydrorachis, hydrocephalus, and in general in all serous collections.—*L'Union Médicale*, Oct. 31, 1871.

46. *Amputation through the Condyles of the Femur, by Long Anterior and Short Posterior Flaps; Retention of the Patella and Removal of its Cartilaginous Surface; Division of the Rectus Tendon; Tubular Presse-artère applied to the Popliteal Artery; Torsion of the smaller Vessels; Antiseptic Treatment of the Stump; Recovery*.—MR. B. WILLS RICHARDSON reports (*Dublin Quart.*

Journ. Med. Sci., Nov. 1871) the following interesting case of this. The subject of it was a girl, æt. 12, admitted into Adelaide Hospital, under his care, October 19th, 1870. The preceding May she had been attacked "by severe pain at the inside of the left ankle, and shortly afterwards an abscess formed and opened a little above the internal malleolus, whence there was a constant discharge of matter. Other openings subsequently made their appearance between it and the knee, the highest one being close to that joint. The chief discharge escaped through the opening at the malleolus.

"With the exception of poulticing, she had no treatment until her admission to hospital. The left leg was then semiflexed upon the thigh, and the knee immobile from false ankylosis. Between the knee and the malleoli there were seven openings in the skin, communicating with cloacæ situated in the front and internal part of the tibia. The ankle-joint was much enlarged, and, when moved, was the seat of excruciating pain. Loose bone could be felt at the bottom of each of the three upper cloacæ. A probe could be passed directly into the ankle-joint through the lowest opening.

"Percussion elicited slight dullness under the left clavicle, and was attributed by my colleague, Dr. Little, to alteration in the shape of the thorax and direction of the spine, caused by the peculiar position in which she had lain since the commencement of her illness. There was no evidence of renal disease. The pulse averaged 112. Ordered an extra diet with wine, cod-liver oil, and syrup of iodide of iron.

"The propriety of an immediate tentative operation for the removal of the loose bone was discussed by myself and colleagues, but, as she was much worn and debilitated, we concluded that it would be better, from the presence of the acute disease of the ankle-joint, to amputate rather than perform a partial operation. Very slight improvement ensued upon the medicinal and dietetic treatment prescribed, and the ankle-joint pain was agonizing, although narcotics were freely given hypodermically and by the mouth.

"Eventually I amputated at the knee, on 14th December, 1870, by long anterior and short posterior flaps. The anterior flap was formed of the skin of the front and sides of the knee and leg to a couple of inches below the tuberosity of the tibia. It was cut of a semilunar shape inferiorly, and was given sufficient width to cover the face of the stump. After the opening of the joint and division of the ligaments, the short posterior flap was made by cutting downwards and backwards. About an inch of the condyles was removed with the saw. The patella was next grasped with the lion forceps, and its articular surface sawn off with Butcher's saw, the blade of the saw having been previously fixed with its sides horizontal in the frame. The rectus tendon was cut across just above the patella, for the reason I have given in the prefatory observations. My tubular *presse-artère* was applied to the popliteal artery, and three or four smaller vessels were twisted. As soon as the flaps were washed with a solution of carbolic acid, creasote, glycerine, and water, they were brought together and retained in position with twisted sutures. Finally the stump was covered with a thick layer of carbolic acid cream, and she was given a hypnotic dose of solution of muriate of morphia. Extra diet; Liebig's essence of meat; wine, six ounces. The pulse rose in the evening to 120, and she was very restless. The morphia draught having been vomited, she had hypodermically $\frac{1}{6}$ gr. acetate of morphia, and $\frac{1}{120}$ gr. sulphate of atropia.

"15th Dec. Slept several hours after the hypodermic injection; pulse 145; tongue natural; appetite good; stump covered with another layer of carbolic acid cream. To take three times daily two tablespoonfuls of a mixture composed of infusion and tincture of cinchona, with tincture of veratrum viride.

"16th Dec. Pulse 135. The hypodermic injection was repeated, and caused sound sleep. Stump syringed with a carbolic acid and creasote lotion, and then covered with a layer of carbolic acid cream.

"17th Dec. Pulse 132; tongue natural. She had a good night with the assistance of the hypodermic injection. Stump managed in the same way; ordered a purgative; chicken added to her diet.

"18th Dec. Pulse 120; tongue natural; slept well; no suppuration from the stump, which was managed in the same way. Wine reduced to eight

ounces, and the cinchona mixture, with tincture of veratrum viride, was continued.

"19th Dec. Pulse 120; tongue natural. At noon I removed the *presse-artère* from the popliteal artery, being the 121st hour since its application. Not a drop of blood escaped. Some dilute sulphuric acid was added to the cinchona mixture, to check the purgative influence of the veratrum viride. Stump managed in same manner.

"28th Dec. Pulse 90. Same management of the stump, excepting that a couple of adhesive-plaster straps were used to assist in maintaining the patella in contact with the femur.

"5th Jan. 1871. Stump nearly healed, and syringe discontinued. Up to this date no suppuration had taken place beneath the flaps, but matter came from the granulations uniting their margins, to which the carbolic dressing was incessantly applied, showing that here, at least, it was powerless to prevent suppuration. The patella felt firmly consolidated with the femur.

"26th Jan. Upon crutches daily since the 23d January. The patella was immovable.

"I saw the girl in July, 1871. The stump was painless, bore pressure well, and the patella was immovably fixed in its new position. The cicatrix was well above and behind the end of the bone.

"It will be seen by the following description of the diseased tibia that amputation was the most likely step to afford satisfactory results in this case:—

"The bone is diseased from two or three lines beneath the upper epiphysary junction to the malleoli. There is an imperfectly formed bony case, the surface of which resembles sponge in appearance, and is roughly tuberculated. Excepting anteriorly and internally it is deficient below. It is perforated by twenty-six openings, the greater number of which are situated along its anterior and internal surface. They are very irregular in shape, one being long and oval. These openings lead down to the old shaft, which has thrown off several loose, thin exfoliations, and one tolerably long and slender piece that might be called a sequestrum. The remainder and greater portion of the shaft from condyles to malleoli is porous, spongy, and rough, and is consolidated behind for its whole length with new bony deposit. It, also, is perforated or rather riddled below with openings, two of which directly communicated with the ankle-joint, the lower epiphysis having been detached during life. The largest of these openings allows the tip of the forefinger to enter it, and matter passed freely through both from the diseased bone to the joint.

"The superior articular surfaces of the astragalus are completely deprived of cartilage, and when recent the bone itself was abnormally vascular."

47. *Treatment of Stump after Amputation.*—F. BARTSCHER remarks that as early as the year 1856 (*Deutsche Klinik*, No. 51) he had recommended the abandoning of the bandage usually applied to the cut end of the stump. Since then, in the same periodical (1871, Nos. 27, 29), he presents a new series of cases which were treated upon the same plan. As to the mode of operating, M. B. had at first preferred to every other that by the circular incision. As the retraction of the flap in such operations is very considerable, he has adopted Burrow's plan of securing it over the cut surface of the stump by the interrupted suture. In his recent series of cases the amputation was by the formation of a forward flap. After the operation is fully completed, omitting every form of bandage, the end of the stump is simply to be enveloped by a compress soaked in water, which is to be changed twice every day. By this means the surface of the stump is preserved scrupulously clean, and the formation of crusts by the drying of the pus when it forms, prevented. According to M. B., the chief recommendation of this mode of dressing is the very small amount of mortality which is reported to have occurred during its use. Of four amputations of the thigh, seven of the leg, one of the humerus, and one of the forearm, part of which were performed under the most unfavourable circumstances, only two terminated fatally. Both these deaths took place after amputations of the leg. In one of these cases the patient, an aged female, laboured under gangrene from emboli of the bloodvessels of the leg. The second case was that of an un-

healthy man with complicated fracture, which was already pyæmic, as, also, quickly became the wound produced by the operation. D. F. C.

48. *Excision of Scapula for Encephaloid Disease.*—Mr. CHARLES STEELE, Surgeon to Bristol Infirmary, records (*British Med. Journ.*, Oct. 14th, 1871) a case of this in a boy admitted into the Bristol Infirmary. The tumour occupied the whole surface of the scapula, and its increase was rapid. The patient improved greatly after the operation, and the wound proceeded favourably, and there was a prospect of the patient being restored to health, when, seven weeks after operation, two small firm nodules were perceptible, one near the centre of the wound, the other towards the axilla. Mr. S. excised these, and the patient again improved, but the disease returned, and the patient died about five months after admission to the infirmary.

49. *Operation of Opening the Larynx by Section of the Cartilages, etc., in order to facilitate the Removal of Morbid Growths.*—Mr. A. A. DURHAM, in a paper read before the Royal Med. and Chirurg. Soc. (Nov. 14, 1871), relates in detail five cases in which this operation had been performed in Guy's Hospital: in three cases by himself, in one by Mr. Bryant, and in one by Mr. Davies-Colley. The results in four of these cases had been eminently satisfactory, free respiration and good voice having been regained. The remaining case was still under treatment. Appended to the communication were more or less complete reports of all the cases which the author had been able to find on record. These cases were thirty-two in number, and, with the five detailed in his communication, gave a total of thirty-seven. In nineteen of these, the operation might be regarded as having been completely successful, natural respiration and voice (though in some instances not normal in tone) having been restored. In seven, partial success was obtained, respiration having been restored, but the voice lost or very seriously impaired. In four cases, some temporary relief was obtained. In three, the result might be considered negative, neither good nor harm having been done. The reports of at least two were incomplete. In two cases only, death resulted. In each of these, however, the immediate cause was blood-poisoning. Metastatic abscesses were found in the lungs in one case; in the other, erysipelas and gangrene occurred, and broncho-pneumonia and exhaustive fever ensued, and led to the fatal issue. Comparing the results thus stated with those given by Dr. Mackenzie in his treatise on Growths in the Larynx, the author pointed out that death could properly be attributed to the operation in two only out of the nine cases enumerated by Mackenzie as having terminated fatally, these two being the same as those already alluded to. With regard to the other seven cases, the author specified each, and showed that in each the result of the operation was favourable, or, at any rate, in no degree mischievous, and certainly not fatal. Some of the difficulties liable to be encountered in the operation were then briefly discussed, and the opinion was expressed that such difficulties were really fewer and more easily overcome than appeared to be generally supposed. In conclusion, the author pointed out that it was not necessary to institute any comparison between the dangers and difficulties of this operation and those met with in the removal of growths through the mouth by the aid of the laryngoscope; nor, indeed, was it at all fair to estimate the comparative merits of the two methods of proceeding by bare numerical statements of the results obtained. If, in any case, removal of the growth by aid of the laryngoscope should appear practicable, the idea of resorting to section of the cartilages could not be entertained until fair trial had been made of the minor operation. In very few, if any, of the cases on record in which the larynx was opened, would it have been practicable to remove the growths through the mouth. Indeed, in many instances, numerous abortive attempts through the mouth were made before resort was had to section of the cartilages. With regard to the chances of recurrence, there could be no doubt that the more completely the original growth was removed, the less would be the probability of its reappearance. Neither could there be any doubt that such complete extirpation could be more certainly effected in most cases after section of the cartilages than by any method practised through the mouth. Dr.

Mackenzie's conclusions as to the comparative chances of recurrence, as affected by the method adopted, appeared to the author unfair and likely to mislead. Cases of cancer (a malady very likely to recur) were included in one, and excluded from the other, of the sets of cases between the results of which a numerical comparison was made.—*British Med. Journ.*, Nov. 25, 1871.

50. *Aspiration of Gas and Fluid in Strangulated Hernia.*—M. DUPLOUY, Prof. of Clinical Surgery at Rochefort (*Lancet*, Oct. 14, 1871, from *Gaz. Hebdomadaire*, February 6, 1871), having been consulted in a case of strangulated hernia of three days' standing, in a man of eighty-two, had recourse to the above-mentioned operation. Herniotomy was not thought advisable on account of the patient's age, and the needle and aspirating syringe were used. Only gas was at first evacuated, and by continuing the play of the piston, fluid tinged with fecal matter was obtained. The bowel thereupon became flaccid, and was easily returned. The case did well, and it is supposed that, the puncture being very fine, the fibres closed the minute aperture by lying against each other, fatal effusion being thus prevented.

Evacuation of gas by puncturing has been in vogue of late with French surgeons in cases of tympanites, the result being in some instances favourable. Dr. Rahn (*Montpellier Méd.*, June, 1871) succeeded in a case of strangulated hernia by injecting in the vicinity of the tumour the twenty-fifth part of a grain of sulphate of atropia.

We may add that, in 1865, M. Tartarin published several cases in the *Bulletin de Thérap.*, in which he succeeded in reducing strangulated hernia without ketotomy, by the use of the following liniment: Glycerine and croton oil, of each 45 minims. With this compound three frictions were made on the tumour, the first at 2 o'clock, the second at 3, and the third at 4. Before the last two frictions the skin was washed with soap and tepid water, and the spot carefully dried with a piece of fine linen. At 5, a copious stool was obtained, and the contents of the hernia were easily reduced. The case did well.

51. *Puncture in Tympanites.*—M. PIORRY has communicated to the Academy of Medicine an elaborate memoir on puncture in gastro-intestinal pneumatoses, and gave (meeting of Nov. 14) the following as his conclusions:—

Puncture of the abdomen performed for the evacuation of gas contained in the stomach and intestines is very dangerous.

It should never be resorted to until after having determined as fully as possible the anatomical and physiological causes of the accumulation of the gas in the intestinal tube, and until after exhausting all other means of relief.

It would be desirable before recognizing this operation in surgical practice, to institute new experiments to discover some means by which the fluids and gases may be prevented from penetrating in the peritoneum, and to decide the precise spot at which, in general, the puncture should be made.—*Archives Générales*, December, 1871.

52. *Scroto-Plastic Operation.*—Dr. J. FULTON, Professor of Physiology, Trinity College, Toronto, relates (*Canada Lancet*, Nov. 1871) an interesting case of this. The subject of it was a man who, while standing astride the tumbling-rod, at its connection near the cylinder, of a threshing-machine, for the purpose of oiling some part of the gearing, had his pantaloons and shirt entangled in the bolts, by which he was drawn down to the rod. "Realizing his dangerous position, he placed his hands on the rod and with a powerful bound freed himself from his entanglement, at the same time stripping himself of every article of clothing. At first he was scarcely aware of having received any injury; but the hemorrhage attracted his attention, and on examination it was discovered that the scrotum was entirely removed, and the integument of the penis torn from the root and reflected forward over the glans. This was replaced by the bystanders, and he was taken up and conveyed home. The hemorrhage was not great, and very little constitutional shock was occasioned by the injury. Upon examination, I found the whole of the perineal region stripped of integument, the scrotum entirely removed, and with it the left tes-

ticle, the cord of which was torn from its connection within the body. The right testicle and cord were laid bare, but otherwise uninjured. No serious damage was done to the urethra, and I was able to pass the catheter into the bladder, and remove a small quantity of urine. The remaining testicle being entirely free from any organic lesion, I felt it my duty not only to try and save it, but also to provide it with a suitable covering. True, it might have healed over, forming for itself a kind of integument, but this I felt would be a tedious process and would not form a very good covering when done, and therefore I decided at once to utilize a portion of the integument from the upper and inner surface of the corresponding (right) thigh.

"The patient was put under the influence of chloroform and ether, and, assisted by Dr. McLachlin, of Fingal, I proceeded to fashion a new scrotum for the *forlorn* testicle. I commenced the incision at the upper and inner part of the thigh, at the anterior part of the perineal region, and carried it downwards to the extent of six or seven inches, then outwards and upwards towards Poupert's ligament, an inch and a half external, to the situation of the cord. I then dissected up this portion of integument, which was oval in shape, from six to seven inches long, and from four to five inches wide, taking care not to wound the saphena vein. The flap so formed was next brought over the anterior surface of the testicle, made to surround it, and the edges stitched posteriorly throughout the whole length. A small quantity of adipose tissue was dissected up with the integument, and did good service in preventing any sloughing of the flap. The newly-formed scrotum was connected, as will be seen, by a neck an inch and a half in width, which was sufficient to insure the vitality of the flap, and was sufficiently large to embrace the testicle comfortably. A small portion of integument was also removed from the left thigh, and brought across the perineal region, in order to facilitate the formation of integument in that part.

"This might be considered almost a case of transplantation, although that subject had not as yet been discussed, much less put into practice. The wound in the thigh was partly brought together with adhesive plaster, and the patient put quietly to bed, and opium ordered to be given to allay the pain and procure rest. The stitches were removed on the third day, when adhesion was found to be tolerably complete. The patient made an excellent and rapid recovery. In three weeks' time he was able to move about the house, and in five weeks was able to attend to ordinary business."

53. *Wound of the Liver by a Ball.*—M. VERNEUIL communicated to the Surgical Society, Oct. 18, 1871, the case of a young man in whom a ball from a revolver had passed entirely through the liver. When admitted into hospital, M. V. found in the left hypochondriac region an enormous tumour, 5 centimetres in extent, formed by the accumulation of blood under the integuments. The ball had penetrated between the eleventh and twelfth ribs on the left side, and passed to the corresponding place on the opposite side, where it had raised up the skin without perforating it. The ball in its course had evidently traversed the liver in its greatest diameter. An examination of the chest and of the abdomen showed that there was no effusion in these cavities or peritonitis. The patient had only for a few days slight icterus and some derangement of his digestive organs, which rapidly disappeared. The ball remains in the tissues. There was no suppuration either at the point of entrance or in the track of the ball, nor was there any vomiting, diarrhœa, or fever. The patient has been discharged from the hospital.

Clinical experience proves, says M. V., that wounds of the parenchyma of the liver are not so serious as might at first be supposed.—*L'Union Médicale*, Nov. 23, 1871.

54. *Extirpation of Kidney.*—In the *Würtem. Med. Corresp.-Bl.*, 1871, No. 14, Dr. LINSEER relates the case of a man who received a gunshot wound, Dec. 2, 1870. The ball entered on the left side, immediately below the twelfth rib, in a line drawn from the axilla, and passed out about an inch to the right of the spinal process of the second lumbar vertebra. Hæmaturia occurred

immediately after the receipt of the wound, and continued for twenty-four hours. On the 8th of December the patient was received into the Reserve Hospital at Kirchheim. Out of both wounds, and, somewhat later, from the centre of the fistulous canal which marked the track of the ball, there was a constant discharge of a corrupt urinous fluid, highly albuminous. Hence it was evident that the urine discharged from the wounds, as above, came directly from a wound in one or other of the kidneys. It could not have come from the bladder, as it has been shown that, so long as the kidneys remain in their normal condition, the urine from the bladder contains very little albumen. It was very evident, from all the circumstances of the case, that it was the left kidney that had been wounded by the ball. It was decided that the extirpation of the injured kidney was the only means of promptly securing the patient from an exhausting disease. The operation was performed by Prof. VON BRUNS, March 23. By a perpendicular incision reaching from the crest of the ilium to the twelfth rib, at the outer edge of the sacro-lumbar muscle, the cavity of the abdomen was laid open. The kidney, from an accumulation of urine of an abnormal appearance, was distended into a large sac-like body, requiring the enlargement of the incision by the excision of a rib. The wounded kidney was so firmly bound down at its under surface that it could not be drawn out. After, therefore, applying a ligature around the renal vessels, the convex portion of the kidney was removed by the knife, and the remainder of the organ left in the wound. The loss of blood from the operation was inconsiderable. Ten hours after the operation death took place. On a post-mortem examination it was found that the right kidney was in a diseased condition, its cortical portion being studded with a large number of small abscesses.—*Centralblatt f. d. Med. Wissenschaften*, No. 32, 1871.

D. F. C.

55. *A New Method of Securing the Vessels of the Pedicle in Ovariectomy.*—Dr. P. J. HAYES introduces to the notice of the profession a method, he calls "sub-peritoneal," for securing the vessels of the pedicle after the removal of an ovarian tumour. He is of opinion "it will prove useful, especially where the pedicle is short. The proceeding closely resembles that known as the subcutaneous ligature of nævus, and consists in first compressing the pedicle between the blades of a clamp or long forceps, then passing a needle armed with a stout catgut ligature beneath a good thickness of the serous surface of the pedicle, but superficial to the principal vessels; the needle being withdrawn at the side opposite to the point of entrance, is again passed into the aperture of exit, and pushed between the vessels and peritoneal covering, on the side of the vessels opposite its first passage, until it can be withdrawn through the opening made by its first entrance; then the ends of the catgut ligature are to be strongly tied, and cut off short, so as to prevent the possibility of hemorrhage from the included vessels, yet, owing to the bulk of unligatured substance superficial to the catgut, there will be no sloughing of the end of the pedicle, its vitality can be maintained, and even adhesions will probably connect it with some adjacent portion of the peritoneal surface, whilst in time the catgut, inclosed by living tissue, may become absorbed. Although bleeding from the chief vessels can be prevented in the manner described, yet it is quite possible that oozing may take place from the divided orifices of small circumferential vessels. In such a case the actual canterly applied to the cut surface will afford ample security against recurrence of bleeding.

"Should the pedicle be sufficiently long to permit of its being secured between the edges of the abdominal wound by means of an electro-gilt transfixing pin, the ends of the catgut (or other) ligature, instead of being cut off short, might be passed through the eye of the needle, and carried parallel to the vessels through the centre of the pedicle, so as to emerge at the cut surface, from which they could be withdrawn after the lapse of seven or eight days."—*Dublin Quart. Journ. Med. Sci.*, Nov. 1871.

56. *A Fourth Series of One Hundred Cases of Ovariectomy.*—Mr. T. SPENCER WELLS communicated to the Royal Med. Chirurgical Society (June 13) "A Fourth Series of One Hundred Cases of Ovariectomy," with remarks on the

diagnosis of uterine from ovarian tumours. Following the order of former papers, the author has arranged this fourth series of 100 cases in tables of three series. Series 1. Cases in which ovariectomy was completed—100 cases: 78 recoveries, 22 deaths. Series 2. Cases in which ovariectomy was commenced, but not completed—6 cases: 2 relieved or cured, 4 died. Series 3. Cases where an exploratory incision was made—7 cases: 5 recovered from incision, 2 died. He shows that the mortality after ovariectomy is steadily diminishing. Of his first 100 cases, 34 died; of his second 100 cases, 28 died; of his third 100 cases, 23 died; and of his fourth 100, 22 died. In this fourth series, forty-four have been in hospital and fifty-six in private practice. In private practice the mortality was only 14 per cent., while in hospital it was 31 per cent. The author believes that the mortality in private practice may be taken as a guide to what may become the general average mortality after ovariectomy, and he is convinced that it may be reduced to about 10 per cent., without excluding those extreme cases where the operation is performed as a forlorn hope. The author then proves that large tumours of the non-gravid uterus have been frequently mistaken for ovarian tumours; and he points out how they may be distinguished from each other. He shows that there is nothing in the *history* of a doubtful case which affords any very decisive assistance, and then examines in detail the signs afforded by inspection and measurement of the abdomen, by palpation, and by percussion and auscultation, which are of value in diagnosis. He then describes the conditions to be observed in examination by the vagina and rectum—alone or combined—and in conjunction with examination by the abdominal wall, deferring to a future opportunity any account of the results obtained by exploratory puncture or incision.—*Med. Times and Gazette*, June 24, 1871.

57. *Wound of the Intestine during Ovariectomy, with Recovery.*—Dr. CHRISTOPHER HEATH communicated to the Clinical Society (Nov. 10, 1871) a case of this. The patient was under his care in the Hospital for Women, in November, 1870, suffering from an ovarian tumour, which had been repeatedly tapped, and for the removal of which an attempted ovariectomy had been undertaken by another surgeon a year before. The patient was worn out with pain and sickness, and was anxious that another attempt at ovariectomy should be made. This was undertaken by Mr. Heath on November 25, 1870, when very extensive adhesions to the surrounding structures were found. On enlarging the abdominal incision with scissors in the ordinary way, an empty coil of small intestine, which was closely adherent to the wall, was divided in three-quarters of its circumference. The removal of the cyst was accomplished with considerable difficulty, the pedicle being tied and dropped. Mr. Heath then attached the bowel to the skin with silk sutures, forming an artificial anus, and closed the abdominal incision with wire sutures. The patient made a perfectly good recovery, feces and flatus passing by the artificial opening on the second day, and solid motions per anum. The silk sutures were removed on the eleventh day, and the patient was moving about at the end of a month. Three applications of the actual cautery were made to the edges of the fistula to contract it, but it did not close, and the patient left the hospital in April, 1871. She was presented to the Society in a very comfortable and healthy condition, the use of a belt and air-pad satisfactorily retaining all fecal matter, and the patient having regular stools.—*Med. Times and Gaz.*, Nov. 25, 1871.

58. *Polypus of Rectum in Children.*—Since 1856, when Dr. BÓKAI first called attention to the polypus of the rectum in children, he has observed twenty-five cases. The tumour varied in the different cases, in size, consistence, form, and colour. The stalk or stem by which the polypus was attached to the intestine was also of different lengths and thickness. The leading symptoms indicative of the presence of the tumour, frequent ineffectual calls to stool; often a slight discharge per anum of blood and slime; actual hemorrhage is of seldom occurrence; the most distinctive symptom is the projection of the polypus from the anus, usually after a stool. It is always difficult, often impossible, to detect the presence of the polypus within the rectum. It may be brought into sight,

however, by the administration of a clyster, or, by the child, if old enough, pressing down as at stool. Polypus of rectum is distinguished from dysentery chiefly by the absence of tenesmus and fever; from prolapsus ani by the ring-shaped, rose-like, or longish cylindrical form and painful character of the prolapsed portion, its augmentation in size by the tenesmus it gives rise to; the edges finally spreading sidewise, and presenting, usually, in the centre or on one side the opening into the rectum. The seat of the polypus is usually between the inner and outer sphincters, and inserted at the posterior wall of the intestine. The prognosis is always favourable. The removal of the polypus is by the application of a ligature, and subsequently the tearing away, or not, of the tumour. The latter may be held firmly during the operation, by a forceps, or by what Dr. B. prefers, a finely constructed clamp, as suggested by Serres.—*Centralblatt f. d. Med. Wissenschaften*, from *Jahrb. f. Kinderheilk.*, N. F. IV. 1871. D. F. C.

OPHTHALMOLOGY.

59. *Colour Blindness from Diseases of the Eye.*—In *The Royal London Ophthalmic Hospital Reports* for Nov. 1871, we find an account of the researches of Dr. X. GALEZOWSKI, as to the effects of diseases of the eye on the perception of colours, taken from the *Annales D'Oculistique* for May and June, 1871:

The result of his examination of 766 patients suffering from alterations in the fundus oculi has been to establish three varieties of chromatic defect: A. Morbid "Contrast of Colours." B. Colour Blindness. C. Scotomata for Colours. A. The name "contrast" of colours has been given to the mutual opposition between different colours when seen together, or when seen successively, by which a mixed tint (complementary colour) is produced unlike either of those looked at. This physiological phenomenon is met with, under exceptional circumstances, in healthy eyes, but analogous phenomena result from the morbid conditions brought about by the abuse of alcohol. The impression produced on the retina by one colour remains too long, so that another cannot be seen properly till a considerable interval has elapsed. After the patient has shut his eyes for a while he can tell any colour well. If such a patient be told to look at several colours at once, he will see nothing but confusion, though he will be able to recognize any one separately. B. Colour blindness. 1. In optic atrophy. This is the disease in which colour blindness is most frequently met with. Of 156 patients with optic atrophy, 66 were unable to detect one or many colours, or even any at all.

Green is the first colour which fails to be recognized, and afterwards red. Nearly all patients suffering from progressive atrophy take the green for gray, and as the malady advances, the red becomes less and less perceptible, changing into brown, and then into black. Blue is perceived for a very long time, and yellow is detected almost as long as the patient can see light. As the yellow occupies so large a part of the solar spectrum, it may also have a larger surface than the other colours in the retinal cones, so that, though they are atrophied, they still perceive the yellow. The author has only met with total colour blindness in two cases. The atrophy, consecutive to neuritis or neuritis itself, more rarely gives rise to colour blindness. Alcoholic amblyopia may produce complete colour blindness, or only for a certain colour, and the blindness varies from day to day; green is generally confounded with gray. Glaucoma gives rise to colour blindness only exceptionally. 2. Hysterical amblyopia. Cases of this affection are given, and an account of the effect on perception of colours. One fact noted is, that in all the cases, besides the loss of perception of yellow and blue, all the others cease to be seen; often, even, the patients cannot tell black and white. 3. Optic neuritis, hemiopia, and different varieties of cerebral amblyopia. These are generally exempt. The loss of the faculty of distinguishing yellow indicates most frequently a syphilitic

cause, and the neuritis is then accompanied by choroiditis or retinitis. 4. Albuminuric and glycosuric retinitis. Colour blindness in these cases is very inconstant. 5. Congenital retinitis pigmentosa. This does not habitually lead to colour blindness. 6. Syphilitic choroido-retinitis. This is one of the affections which most frequently lead to colour blindness. The colour generally mistaken is yellow. Blue and green are also very frequently not recognized. The explanation of these phenomena is to be looked for in the wide-spread inflammation of the whole retina and choroid at once. Partial syphilitic inflammations of the retina, as well as certain forms of choroiditis, do not produce any chromatic defect. C. Central scotomata for colours. This variety is probably due to alterations of the yellow spot, and in certain cases to atrophy of the optic disk. Apoplexies, on the yellow spot, lead to temporary or permanent loss of central perception of colour. In ten cases of idiopathic retinal hemorrhages, the patients could not perceive any colours when they looked straight at them, but when they looked with the lateral portions of their retinae, they could detect the principal colours without difficulty. Detachment of the retina, not materially affecting the sight, does not affect the perception of colours. In a certain number of cases the patients have complained that either before or very soon after the occurrence of detachment of the retina, they have, for days or weeks, or even longer, seen every object coloured blue or violet. The light of a candle or of the gas seemed to them to be of a fine blue colour, such as azure or ultramarine blue.

[It may be remembered that the editor of this Journal, in the number for August, 1840, called attention to inability to distinguish colours, resulting from disease of the eye, and he was, we believe, the first to do so, that inability having previously been supposed to be always a congenital defect. He studied this inability first in a patient during *recovery*, and noted the *succession* in which colours were distinguished. Dr. Galezowski has recently studied the defect in patients *losing* their ability to distinguish colours during the progress of disease, and noted the order in which this inability manifested itself. The results of the two strikingly accord. Dr. Hays noticed that on recovery the first colour his patient was able to distinguish was yellow, next blue, and then red. Dr. G. observed that in his patients the last colour they were able to recognize was yellow, before that they recognized blue, and still earlier in the disease also red.

Dr. H.'s observations were recorded still more fully in the edition of Lawrence's *Treatise on the Diseases of the Eye*, published by Blanchard & Lea, in 1854.]

60. *Form of Amaurosis supposed to be due to Tobacco.*—MR. JONATHAN HUTCHINSON published in the first volume of the *London Hospital Reports* a series of cases of amaurosis supposed to be connected with tobacco, and afterwards in the *Transactions of the Medico-Chirurgical Society* for 1867 a statistical summary of his experience during the three intervening years, and in the *Royal London Ophthalmic Hospital Reports* for November, 1871, he publishes a third series of cases, 29 in number, of the same kind, including most that came under his notice during the four years, 1867, '8, '9, and '70.

"Any one," he says, "who may take the trouble to compare the cases given in these three reports, will be struck by their similarity, and by the remarkable confirmation which the two later papers give to the conclusions of the first. A very great disproportion in the numbers of the two sexes who become the subjects of "idiopathic amaurosis," was one of the facts brought out (for the first time) by my first report. In it the numbers were 37 men and 3 women, and in the second they were 34 men and 5 women. In the present one they will be found to be 28 men and only one woman. There can, therefore, be no reasonable doubt that we have to deal with a formidable type of symmetrical amaurosis which is almost exclusively confined to the male sex. For myself, I may briefly avow that I have scrupulously investigated other possible causes, and that I feel no hesitation in believing that in most of these cases tobacco is the real one.

"The facts as regards the one woman whose case is included in the present

series are extremely interesting. Her case in every feature resembled those which, in males, I attribute to smoking, and upon this point I had made special comment to those who were attending my class. After I had done so, she informed me that one of her sons had formerly been my patient, and that a nephew had been under the care of Mr. Hulke. I referred to my notes, and Mr. Hulke was kind enough also to refer to his, and we each found that the cases had been diagnosed as tobacco amaurosis. In each the patient was a young man and a smoker. Now, the lesson of these facts seems to me to support the opinion I have long held, that when tobacco causes blindness, it does so in virtue of an idiosyncrasy. It is by no means improbable that such idiosyncrasy will be found occasionally in several members of the same family, and further, that it may involve liability to suffer from other influences besides tobacco-smoking. Thus, then, we have two young men, cousins, attacked by amaurosis at an early age in virtue of an idiosyncrasy rendering them liable to special poisoning from tobacco; and we have a woman, who had never smoked, the mother of one and aunt of the other, at a much later period of life becoming the subject of a similar form of nerve disorder in virtue of the same peculiarity of diathesis acted upon by a different exciting cause. In her not improbably the exciting cause was the disturbance consequent upon the cessation of menstruation.

"Holding the opinion that there must be some pre-existing peculiarity in the nervous systems of those who become the subjects of tobacco amaurosis, I have been very anxious to discover, if possible, whether it reveals itself by any other signs. The only points in this direction to which I feel at present inclined to attach any importance are the following. Not unfrequently it will be found that these patients have had unusual difficulty in learning to smoke, and have throughout life displayed special susceptibility to its influence, and that also they have often been beyond the average liable to suffer from sea-sickness. In the tabular statement some information will in many cases be found given on these points. My attention to the matter of sea-sickness was first given in consequence of the statements of some patients who were sailors, and who specially referred to it.

"We have, during the last few years, made the observation that those who suffer are, almost invariably, smokers of *shag*, the most deleterious form of tobacco. As regards the results from disuse of tobacco, my impression is strong, that almost invariably, when the disuse is real and complete, the state of vision improves. I cannot exaggerate the expression of my conviction as to the duty of urging immediate and complete abstinence in the early stages of this most serious malady. Many of my patients came too late, having continued to smoke until the disease was far advanced. I have never seen a case in the early stage in which the disease went on to blindness if the patient had strength of will to give up the habit. In a large majority of those in whom, according to the patient's account, the habit was wholly abandoned, I had reason to suspect that it was only reduced. My experience on this point fully confirms that of Dr. Mackenzie, that there are those 'who would rather smoke than see.' It is very few, however, who have the honesty to admit their inability to give up the habit, and hence a very annoying source of fallacy in our inferences as to the effect of treatment."

In the five worst cases, each of the patients had been a *smoker for a long time*; in several of the cases the *quantity of tobacco smoked* had been comparatively small. There were *other signs of intolerance of tobacco* in these five cases. In all the worst cases the patients had used alcoholic drinks, and two of them had been great drinkers. In the worst case of all, the patient had smoked for twenty-four years, but had not smoked as much as most of the others; but he had had difficulty in learning to smoke, and smoking had often in after-life made him sick and nervous.

61. *Anæsthesia of the Retina*.—Dr. A. SICHÉL, Jr., understands by this term a failure of the power of transmitting sensations to the brain, with a want of susceptibility of the retina itself. The retina perceives the impression, but the patient remains unconscious of it. The attack generally comes on suddenly,

follows some severe moral impression, and occurs in those who have a sensitive nervous organization. Some few days generally elapse after a fright or loss of consciousness before the failure of sight ensues. There are no objective symptoms of the affection; the ophthalmoscope reveals no changes; a sensation of light is produced by pressure on the eyeball in any position, and the pupils are normal. The field of vision alone furnishes us with valuable information; generally there is either concentric limitation or scotomas or manifold variations. The patient may complain of any degree of loss of sight, from simple amblyopia to complete amaurosis. Often the acuity of vision is only reduced to one-half or one-third of the normal standard. It is not diminished by artificial light, but is often increased by the employment of coloured glasses. Various "hysterical" symptoms are often present. The duration is uncertain, and the severity of the malady is subject to variations at different times, but its course is usually benign, and ends in all cases in a cure. The treatment should be of a general character. Two cases are narrated: the first is given in great detail, and was that of a man 28 years of age, whose history extended over a period of twelve years. At the commencement he was seized with loss of sight of the right eye, which came on in the course of a few days, and lasted about a year. Four years later a similar attack occurred. He consulted M. Sichel, the elder, who ordered tonic remedies. The patient recovered at the end of about eight months. Seventeen days before he finally came under care the patient had been seized with a sunstroke while forming one of a picnic party. The next day he suffered from loss of consciousness for two hours, accompanied by vomiting and purging. Five days later he was seized with intense pain in the head, immediately followed by progressive failure of sight of the right eye. At the time of examination the vision of the right eye was completely lost. The chief point of interest was the variation in the extent of the field of vision of the left eye, of which numerous charts are given. At times there was an inability to distinguish certain colours. Von Graefe, being in Paris, was consulted, and M. Sichel told him he suspected that the amaurosis was simulated. The diagnosis of retinal anæsthesia was confirmed, and treatment by oxide of zinc recommended (four grains divided into 200 pills, one to be taken thrice daily, and the dose increased, by one pill every two days, to four pills three times a day). Gradual recovery followed. The sight of the right eye returned, and the field of the left became normal. M. Sichel sums up the case, and remarks that it would be difficult to find a more perfect type of hysteria, and he thinks that the diagnosis of retinal anæsthesia or of hysterical amaurosis is indisputable.

The second case was very similar to the first, but the patient was a woman aged 26. The symptoms had lasted about three weeks. She had had a similar attack at the age of 8 or 9 years. She had a second one at the age of 15 or 16. Various methods of treatment were tried for the relief of the attack for which she came under care, but no good result followed till the oxide of zinc was employed. She then steadily improved. At the end of three months she returned home able to resume her occupation, that of a seamstress. She was of a highly nervous temperament, and presented symptoms of an essentially hysterical character. This case was analogous to the preceding, from the fact that the defect of sight was accompanied by hysteria; that there was an entire absence of any change in the fundus oculi; that phosphenes could be produced; that the result of objective examination was negative; and that vision returned under the influence of anti-chlorotic and anti-hysterical remedies.—*Royal London Ophthalmic Hospital Reports*, Nov. 1871, from *Annales d'Oculistique*, May and June, 1870.

62. *The Coexistence of Aneurismal Changes in the Retina, with Aneurisms of the small Arteries of the Encephalon.*—H. LIONVILLE communicates a note on this subject to the *Gaz. des Hôp.*, 1870, No. 36, p. 151, given in full in the *Ann. d'Oculistique*, September—October, 1870, p. 169. We select the following points:—

The author has previously shown the coexistence of small (miliary) aneurisms of the small arteries of the various parts of the body with miliary aneurisms of the small cerebral vessels (aneurismal diathesis), and he argued then, that if

aneurismal changes in the vessels were dependent on an alteration in the whole arterial system, rather than on a local lesion in this or that part of the body, these aneurisms, developed in connection with a general change, might be met with in some parts accessible to our investigation, such as the retina. The retina seemed to him, in fact, to be one of the organs which it would be easy and important to investigate for the detection of this general condition, and he expressed a hope that either during life or after death its examination would reveal important information. The object of the present note is to show that such information has been obtained.

In 1868 the author communicated the results of his investigations to the Biological Society.

The first case was that of a woman, aged 87, who had had (two years before) a sudden attack of right hemiplegia, without loss of consciousness; afterwards she suffered from dizziness, flushing of the face, and headache, and she died August 15, 1868.

The bloodvessels were found in places to be very atheromatous; there were well-defined aneurismal dilatations on the meninges, and numerous miliary aneurisms on the surface and in the interior of the brain, in the cerebellum, and the pons Varolii. Examination of the right eye showed the retinal vessels to be very much dilated, gorged with blood, and tortuous; and in their course were found rounded dilatations, separate, and resembling aneurisms completely, which they were at once suspected to be, but this could only be proved on examination with a lens. The crystalline lens was opaque, otherwise, the author remarked then, these lesions might have been demonstrated by ophthalmoscopic examination.

In the following year MM. Bouchereau and Magnau showed some specimens to the Society, from a remarkable example of general aneurismal changes. The patient was a man aged 58, who drank excessively, was subject to epileptic fits, and died in one. At the autopsy there were found cerebral hemorrhages, cerebral aneurismal dilatations, retinal hemorrhages, and miliary aneurisms and spinal meningitis.

A third case the author saw in conjunction with M. Charcot. The patient was 72 years of age, and had died after slight apoplectic attacks. The autopsy revealed innumerable miliary aneurisms, scattered throughout the brain, cerebellum, pons Varolii, and the membranes. They were of all sizes, of different ages, and in many places corresponded with multiple, localized apoplexies, also of different ages. There were extensive arterial changes in various parts of the body, but also aneurisms were found in both retinae. These aneurisms corresponded to small apoplexies infiltrated into the retina itself. Briefly, there were disseminated here and there, small zones of ecchymosis, of a rusty-yellow colour, surrounding rounded dilatations of the vessels, which could be made out very fairly with the naked eye, and could be distinctly demonstrated with a lens. Moreover, microscopic examination discovered others, which, on simple inspection, had not been recognized. Some required to be magnified 10 or 20 diameters before they could be recognized, whilst others were as large as a small pin's head, or as a tobacco seed, and one had attained the size of a small millet seed. In this case the lenses were clear, and an ophthalmoscopic examination might have been made.—*Royal London Ophthalmic Hospital Reports*, Nov. 1871.

63. *New Method of Extraction of Cataract*.—M. R. LIEBREICH, Ophthalmic Surgeon and Lecturer to St. Thomas's, in a recent lecture made some interesting observations on Graefe's operation for extraction of cataract, and described a new method for which he claims great advantages.

"The frequent occurrence of total suppuration after flap-extraction induced the celebrated operators of Moorfields Hospital to return to, and to improve, the linear extraction, which at that time had been almost abandoned. Graefe, struck with the results which Messrs. Bowman and Crichtett had obtained, submitted the question to further studies, and so formed the method which is now generally adopted in England as well as on the Continent.

"There are numerous statistics which prove that in Graefe's method there is

a much smaller percentage of total suppuration than in flap-extraction; also that, even in cases of very bad general constitution, weak and marastic individuals with thin and flabby cornea, the prognosis is not so unfavourable as in flap-extraction; and that the precautions we have to take after the operation, and the restrictions we have to impose upon the patient, are not so great.

"On account of these advantages of Graefe's method, it was natural that the flap-extraction was soon abandoned. To me, however, it appeared that the mechanism of Graefe's operation was still too complicated and too violent; that prolapse of the vitreous body and hemorrhage into the anterior chamber were too frequent during the operation, iritis and strangulation of the iris in the corners of the wound too frequent after it; and that the most favourable results, compared with the most favourable results in flap-extraction, were not perfect enough.

"If these inconveniences be carefully inquired into, it is found that they can all be brought back to one and the same principal cause—namely, the peripheral position of the incision. This peripheral position explains why—

"1. It is impossible to remove the lens without iridectomy.

"2. The excision of the iris is to be large and extensive, else it causes too great an inclination to prolapse of the iris.

"3. It is necessary to perform the operation above, so as to cover a part of this large pupil by the upper eyelid. The removal of the lens upwards is by far more difficult, on account of the tendency of the eye to escape upwards; and, consequently,

"4. During the whole operation, the eye has to be kept open by the speculum, and to be drawn downwards by the forceps. This is not only painful and injurious to the eye itself, but causes—

"5. Not unfrequently, prolapse of the vitreous body, to which a peripheral incision itself already tends. Prolapse of the vitreous body and hemorrhage into the anterior chamber are the chief impediments to a careful removal of all the *débris* of the cortex, and cause—

"6. Those grave forms of iritis which are sustained by the permanent irritation caused by the tumefied remainders of the lens behind the iris.

"Of those disadvantages I was perfectly aware after I had followed for a short time Graefe's original plan; and I proposed, therefore, in 1867, in an article on cataract which I wrote for the *Nouveau Dictionnaire de Médecine et de Chirurgie* (Paris, Baillière), some modifications. They are, however, but the first step I made; and in the last four years I have come, by a large series of systematic experiments, to a method which I now, after more than three hundred operations performed in this manner, consider definitely settled.

"The incision of the cornea is to be made with the smallest possible Graefe's knife, in the following manner.

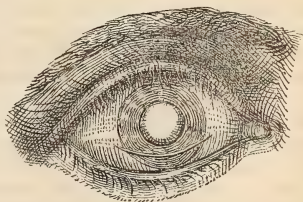
"Puncture and contrapuncture are made in the sclerotic about one millimetre beyond the cornea, the whole remaining incision passing with a very slight curve through the cornea, so that the centre of it is about one millimetre and a half distant from the margin of the cornea. This incision can be made upwards or downwards, with or without iridectomy, and the lens can be removed through it with or without the capsule.

"If, as I now practise, the extraction is made downwards without iridectomy, the whole operation is reduced to the greatest simplicity, and does not require narcosis, assistance, elevator, or fixation; and only two instruments—namely, Graefe's knife, and one cystotome, with Daviel's spoon.

"What are the advantages of this method of operating?

"1. It is undoubtedly of all methods the simplest and the least painful.

"2. It is unconditionally the easiest to perform, and requires the least practice. It may, therefore, be performed by those operators who from time to



time only have an opportunity of doing so; and those patients benefit by it who are unable to reach a central point in order to place themselves in more practised hands. On account of the greater facility of operating, the last pretext for reclinacion of cataract is removed, which, though almost universally and justly condemned, is still here and there performed.

"3. It is preferable to the flap-extraction, on account of the safer and constantly regular incision. The flap-incision scarcely ever acquires the regularity which may theoretically be demanded—even if made by the most practised operator, with the best assistance, the most enduring patient, or under chloroform—by the use of elevator and fixation instruments. Now its height or breadth is not what it is intended to be; now its position is incorrect, or the wound is irregular—indeed, part of it is due to the difficult form of the incision; but by far the greater part, according to my conviction, is due to the mechanism by which the cuneiform cataract-knife is to make the incision. A small Graefe's knife would make a flap safer and more regular than the various other cataract-knives. The incision which I designed can easily be made, in giving it in every case exactly the desired form and position—even if the patient is very restless—without assistance, without elevator or fixation. It mainly depends on the facility with which the place of the contrapuncture can be chosen, the knife drawn back and made to pierce at another point if a mistake is made in the selection of the place for contrapuncture, and in the freedom with which, in terminating the incision, the inclination of the knife can be changed if necessary.

"A little practice will enable every operator to avoid these corrections, and to make the contrapuncture, as well as the whole incision, correctly to his original plan, without subsequent alterations.

"4. Against Graefe's method it has the advantage of a more favourable position of the field for the operation, and avoids through it all the inconveniences to which I have referred, as arising out of the peripheral position of the wound.

"5. In regard to the mode of healing, it favourably contrasts, like Graefe's method, with the flap-extraction, on account of the diminished influences which age, constitution, general state of health, season, and other causes, exert; also on account of the less demand made upon the patient to remain quiet after the operation; and, above all, on account of the lesser tendency to suppuration of the cornea.

"6. The advantages of my method over that of Graefe are shown by the ultimate results obtained; by not showing a greater percentage of total suppuration than in Graefe's method, my best results are, in regard to optical and (if I may use the term) anatomical perfection, identical with the best results obtained in flap-extraction."—*Brit. Med. Journ.*, Dec. 2, 1871.

64. *Reproduction of the Crystalline Lens*.—M. MILLIOT communicated to the Biological Society of Paris, Oct. 14, 1871, the results of some experiments on this subject, which he has been for some time engaged upon. After referring to previous investigations, particularly those of Gruby, Textor, Valentin, and the conclusive experiments of Philippeaux, M. M. gave the particulars of his own, and presented the following conclusions deduced from them:—

1. The reproduction of the crystalline lens in some of the mammiferæ is incontestable. The tubes of the reproduced crystalline undergo, in their reappearance, the same phases that they do during their generation and embryonic evolution.

2. This reproduction only occurs within the capsule of the crystalline. It is in direct relation to the thickness of the cortical layers of the crystalline left after extraction, especially in the equatorial region, and in inverse relation to the age of the animals, and to the lesions of the crystalline capsule.

3. The posterior crystalline capsule seems to take no part in the reproduction of the crystalline, except perhaps in its equatorial portion.

4. This reproduction takes place even when the whole of the crystalline lens has been extracted. It commences generally towards the end of the second

week after the operation, and is completed only between the fifth and twelfth months.

5. The reproduction of the crystalline may be repeated, that is to say, it occurs after the extraction of a crystalline previously reproduced, but it is then limited.

These results are derived from more than forty experiments.—*Revue de Cours Scientifique*, Oct. 28, 1871.

65. *Local Use of Sulphate of Quinia in Granular Ophthalmia*.—Dr. C. BADER, Ophthalmic Assistant-Surgeon, Guy's Hospital, relates (*Lancet*, Oct. 28, 1871) some experiments made with sulphate of quinia in the treatment of granular lids. As much of the salt "as would go on the point of a penknife was placed with a dry camel-hair brush, on the inner surface of each lower eyelid." No other treatment was made use of. In some cases its application was followed by severe smarting, which continued for ten or fifteen minutes; in other cases no pain whatever was felt; in all cases appeared increased purulent discharge from the conjunctiva, with shrinking of the granulations, and clearing of the surface of the cornea. The intolerance of light ceased rapidly in all cases; the dilatation of the pupils appeared in from twelve to twenty-four hours after the first application of quinia. The pupils, though dilated in ordinary light, contracted well on exposure to strong light.

66. *Melanotic Tumour of the Eye*.—Mr. G. LAWSON related to the Clinical Society of London (Oct. 13, 1871) the particulars of a case of large melanotic tumour of the eye, which had burst through the sclerotic and had extended into the orbit. He first excised the globe, and then freely applied the chloride of zinc paste for the purpose of destroying all the tissues within the orbital cavity, and thus effectually to get rid of all the cancer-germs with which those structures are in such cases generally infiltrated. The operation was performed in July of this year, and the patient was now progressing favourably towards recovery. All the tissues within the orbit sloughed, and large portions of the bony cavity have exfoliated. Mr. Lawson remarked, that when the diagnosis of melanotic tumour within the eye is made at a very early stage of the disease, the simple removal of the eye is frequently sufficient. He quoted the case of a patient in whom he had been able to recognize the tumour by the ophthalmoscope when it was scarcely of the size of a pea. He removed the eye, and now nearly three years have elapsed and there has been no recurrence of the disease in the orbit.—*Lancet*, Oct. 21, 1871.

MIDWIFERY.

67. *Instrumental Treatment of Difficult Labours*.—Dr. G. H. KIDD, President of the Dublin Obstetrical Society, in his recent address, entered at length into the question of this subject, illustrating his remarks by statistics based on the practice of the Rotunda Lying-in Hospital during the past eighty years. Dr. Joseph Clarke, who was master from 1787 to 1793, used the forceps but once in each 728 cases. As a contrast, in the three years during which Dr. G. Johnson has now been master, he has employed the forceps once in 14.74 cases. The mortality of the mothers after tedious and difficult labours has fallen from 20.21 per cent. in Clarke's time, to 7.38 per cent. of the present; and of those delivered with the forceps, from 50 to 6.86 per cent. Again, of children born by the aid of the forceps, the mortality had in the same period fallen from 50 to 4.9 per cent. That the use of the forceps was the cause of vesico-vaginal fistula, Dr. Kidd believed to be quite unfounded; on the contrary, this unfortunate accident generally resulted from not using the instrument. Though the use of the perforator and the practice of embryotomy had recently been reduced to a

minimum, great advances had been made in the construction of the instrument required in the performance of this operation. In another class of labours, that of transverse presentations, mechanical skill had also done much to overcome most serious difficulties.—*Brit. Med. Journal*, Nov. 25, 1871.

68. *Contributions to the History of Spontaneous Evolution.* By Dr. KLEINWACHTER.—It is generally conceded that presentations of the shoulder, left to themselves, terminate but rarely by the spontaneous efforts of nature, and are invariably attended with great risk. The author has, until recently, coincided with this opinion, but after a service of several years in a large lying-in hospital, he adopts another view, and regards the spontaneous termination of labours in which the trunk presents as less rare than the majority of accoucheurs are inclined to admit.

The statistics of various authorities take a wide range, although they all serve to show that the cases under consideration are sufficiently exceptional at the best. Thus Ricker found, out of 220,000 labours, 10 cases of spontaneous versions, or .004 per cent. Busch, in 6180 labours, gives 2 spontaneous versions, or .03 per cent. Spaeth, in 12,525 labours, has 5 spontaneous versions, or .03 per cent. Kuhn, in 17,385 labours, reports 9 spontaneous versions, or .05 per cent. The author's results are higher; in 3345 labours he has seen 5 cases of spontaneous version, or 0.116 per cent. He thinks the greater frequency of spontaneous termination in such cases under his observation is to be attributed in part to the practice of the school to which he is attached; to the rarity of surgical interference, the labours being left as far as may be to the efforts of nature. Thus, he has observed cases of shoulder presentation terminate spontaneously, where, version being out of the question, other accoucheurs would have resorted to embryotomy.

During the two years in which Dr. K. was assistant at the obstetrical clinic at Prague, he saw 32 presentations of the shoulder and side, of which 6 terminated spontaneously—1 by spontaneous version, 5 by spontaneous evolution—in all 18.75 per cent. Except in the case of spontaneous version, in which the side-presentation became a presentation of the breech, the labour terminated by spontaneous evolution properly so called (spontaneous version being accomplished at the outlet), and sometimes by expulsion of the body of the fœtus doubled on itself; the first process occurred three times, the expulsion of the body doubled, twice. Of these last instances, one merits special notice. The child presented the side of the thorax, the left arm being outside the vulva. Spontaneous evolution was accomplished, though the child weighed 4 lbs. 4 oz. (4 livres), and the pelvis of the mother was contracted antero-posteriorly. The labour was rapid (ten hours); the mother died on the thirteenth day after confinement, from peritonitis.

After having reported this case in detail, the author makes the following comments. The mechanism of the labour resembled, in its general features, that of expulsion with the fœtus doubled, although the two extremities of the body did not escape simultaneously. The process was like that which one observes at the beginning of spontaneous evolution before the pelvis becomes engaged; but the second stage, the rotation of the child on its transverse axis, did not occur. The expulsion of the child in any other way was impossible, the body of the fœtus undergoing a forced flexion; the flexion was greatest at the base of the neck and the upper part of the dorsal portion of the spine, where it was so marked that the two parts lay parallel; the head was, as it were, driven into the chest, and the face bore the imprint of the bodies of the vertebræ. The arm, which was within the uterus, was extended in the groove formed by the head and the coccyx. One favourable condition, which Birnbaum also indicates, was that the back of the child was at the beginning of the labour directly anteriorly, from which it resulted that the lower extremities were forced against the body by the pressure produced by the promontory of the sacrum and the lumbar vertebræ; a pressure increased in the present instance on account of the diminution of the conjugate diameter. The rotation of the fœtus on its longitudinal axis, which changed the relation of the back so that, from being directed forward, it looked to the left, then backward, was

determined by the projection of the promontory of the sacrum; the child being forced by the strong uterine contractions to occupy the part of the pelvis best adapted to it. This revolution, however, was practicable only because the antero-posterior contraction was slight; a greater diminution, the size of the child remaining the same, would very probably have prevented this, and the subsequent expulsion of the fœtus doubled, could not have occurred.

The mechanism of such a labour as the one described depends very much on the deformity of the pelvis; with a normal pelvis, we should look for a case of spontaneous version by the breech. The rotation of the fœtus on its transverse axis was prevented by the promontory of the sacrum, the contraction of the conjugate diameter rendering the engagement of the body in the direction of the oblique diameter impossible; flexion of the spinal column could alone permit the termination of the labour.

The other conditions which favoured this labour were the following: the fœtus lacked only two weeks at least of its term, and consequently offered less resistance to the uterine contractions, and was, moreover, sufficiently yielding and flexible to adapt itself well to the shape necessary for its expulsion. These conditions were still further assisted by the death of the child at the beginning of the labour and by the partial maceration consequent. Again, the position of the child was favourable; the chest, after the prolapse of the left arm, being contracted anteriorly, and thus enabled to engage itself more easily in the superior strait. Moreover, the well-marked and decisive pains contributed not a little to the progress of the labour; with feeble pains, other things being equal, embryotomy would have been the only resort. The violence of the contractions was favoured by an early escape of the *liquor amnii*, by pressure on the abdomen, and by ergotine. Finally, the woman was a multipara, and the soft parts were very yielding.

The author has been unable to find in the literature of obstetrics any case like the present; that is, spontaneous evolution in a contracted pelvis. He draws the inference that a moderate degree of contraction in the conjugate diameter offers no obstacle to such a labour if the other conditions favour; the mechanism of the labour is, however, considerably modified thereby.

To the objection that the life of the mother might have been saved by embryotomy, the author replies that the labour was ended in about thirty minutes; it would not have been shortened by instrumental interference, or at all events by only a few minutes.

In glancing at the three cases reported by Dr. K., it will be seen that spontaneous evolution is not as rare as is generally believed. The propriety of early interference is likewise questioned, and the teachings of Naegle are not accepted. In his work on obstetrics, Naegle says:—

“This intervention of nature is rare, and occurs under conditions which can be neither anticipated nor looked on with favour by the accoucheur; it is always fatal to the child, and generally presents the gravest risks as regards the mother; the practitioner would be inexcusable who, relying on the problematical powers of nature, refused to interfere at the proper moment and with the proper means.”

In presentations of the shoulder and side, when the waters have escaped at an early stage, one need have no doubt whether the child be alive. The violent compression to which the fœtus is subjected by the uterine walls renders turning impossible; so, if the pelvis be normal, the child small or premature, the pains strong and continuous, the condition of the mother good, ought not the operator to await the natural progress and termination of the labour? At least the mother would not be exposed to the risk of death by injury to the uterus through the use of instruments. The case is a different one, however, when the child is large; embryotomy would in that instance be imperative, the disproportion between the size of the child and the capacity of the pelvis rendering spontaneous evolution impossible, for the mother would probably die before the labour terminated.—*Boston Med. and Surg. Journal*, Sept. 21, 1871, from *Annales et Bulletin de la Société de Méd. de Gand*.

69. *Increase of the Reproductive Energy in the Female.*—Dr. WERNICH (*Beitrag zur Geburtshülfe*, I. 3–16) examined the influence upon the size and weight of the offspring exercised by the age of the mother, and the number of her pregnancies, based upon 1899 births which took place in the lying-in establishment in Munich, with the addition to the observations previously made for a like purpose by Hecker, in 4449 births, giving a total of 6348 observations as the basis of his conclusions, which, like those of Hecker and Duncan, are—
 1. That the weight of the child increases with the age of the mother up to her 39th year; its length, up to her 44th year. 2. Each product of a subsequent pregnancy exceeds that of preceding pregnancy in weight and length, especially when the regular series of conceptions after the first is unbroken. As, when the first child is born in the 24th year of the mother's age, the second when she is 27 years old, the third when she is 29, the fourth when she is 31, and the fifth when she is between 34 and 35 years of age. Increase of intervals between the births acts more beneficially than a diminution. In a change of sexes in the offspring, the late-born female is much the weaker. Females who menstruate very early, have for their first child one endowed with much more strength than those in whom the menses set in late.—*Centralblatt f. d. Med. Wissen schaften*, Sept. 1871. D. F. C.

70. *Involuted Uterus.*—Dr. SNOW BECK exhibited to the Obstetrical Society of London (Nov. 1, 1871) an imperfectly involuted uterus, and gave a minute account of its microscopical characters; from which he concluded—(1) That the essential condition of the organ consisted in the elements of the different tissues retaining a portion of the natural enlargement consequent upon impregnation. But this enlargement was due more to the increased size and amount of the soft tissue present in the walls of the uterus, as well as at the internal surface, than to the increased size of the contractile fibre-cells. (2) That although the bloodvessels were large and loaded with fluid blood, yet there was not any evidence to show that any morbid process, similar to inflammation, had at any time been present. (3) That the whole of the bloodvessels to the minute capillary network at the inner surface formed one continuous system, though the character of the distribution changed towards the inner surface. And, considering there is no division in the uterine walls to justify the description of an internal mucous membrane, this distribution appears to offer a strong argument against the idea that the internal surface can be the seat of inflammation independent of the other portions. (4) That the pulpy condition of the tissue at the inner surface, with the loaded state of the bloodvessels throughout, appears to afford a probable explanation of the frequent hemorrhages which attend similar enlargements. (5) That with regard to any treatment for the removal of this condition, it would appear that this should include topical applications to the whole of the uterine cavities.—*Lancet*, Nov. 25, 1871.

71. *Novel Method of Using the Uterine Sound for Redressing a Flexed Uterus.*—Dr. RASCH, in a paper on this subject read before the London Obstetrical Society (Nov. 1, 1871), laid particular stress on the importance of the part of the instrument inside of the uterus being kept steady in its place, and thus avoiding the irritation which resulted from making a large semicircle of motion in the uterine cavity, according to the usual method. A sound introduced into the retroflexed womb with the point downward and backward, should be first used in that position as a lever to lift up the organ as far as possible. Then, instead of twisting the handle round and making the intra-uterine part swing round the ideal prolongation of the stem, the movement should be reversed, so that the part in the uterus and its ideal prolongation are made the centre of motion round which the handle and stem sweep in a large circle. The movement is well illustrated by grasping the curved part of the sound in one's hand, and swinging the handle round as it will go.—*Lancet*, Nov. 25, 1871.

72. *Prolapse of the Female Genitalia.*—Dr. CONRAD, of Pesth, in a paper read before the London Obstetrical Society (Nov. 1, 1871), maintained that the prolapse of the uterus is for the most part a secondary affection, a primary pro-

lapse being very rare. Prolapse of the vagina is the most important part in any descent of the female genitals, and uterine prolapse is but a sequel of this, the prolapsed vaginal walls pulling down the uterus. Of the different forms of vaginal prolapse, that of the anterior wall is the most common, though frequently associated with prolapse of the posterior wall. A descent of the latter by itself is, however, rare. Should there be a considerable elongation of the cervix, we can certainly conclude that the vaginal prolapse was primary. The elongation of the vaginal portion of the cervix is of no diagnostic value, and is simply the result of mechanical irritation. Dr. Conrad believes it may be justly maintained that elongation of the supra-vaginal portion of the cervix and hypertrophy of the infra-vaginal portion are but secondary affections. The vagina alone is sometimes prolapsed without any descent of the uterus. The author then discussed the most important predisposing causes of prolapse—gestation, parturition, senile atrophy, &c. Prolapse in young girls occurs suddenly from a sudden shock through *contre-coup*. The replacement of a complete prolapsus of long standing should always be preceded by an emptying of the bladder and the rectum. The palliative treatment is best conducted by pessaries, of which the best is Meyer's ring, or Hodge's modification of it. For the radical cure, Dr. Conrad prefers Professor Spiegelberg's operation to any other. It consists of a combination of three operations. The vaginal portion of the cervix uteri, if greatly hypertrophied, is first removed by the galvanic wire. If the posterior wall of the vagina has become prolapsed with the uterus, he performs Dieffenbach's operation, by removing a triangular piece of the mucous membrane of the posterior wall, having its apex to the os uteri, and for its base either the pared surfaces of the rent perineum, when this has been ruptured, to form a new perineum, or where this has not happened, the labia minora, so as to contract the orifice of the vagina, and aid in supporting the anterior vaginal wall. Spiegelberg then proceeds to unite the upper portion of the posterior vaginal wall with the inferior anterior, according to Simon's operation.

Dr. BARNES said that for some years we had all been pursuing a tentative course to find out the best mode of treating these affections. As to the mode of production of hypertrophy, he was scarcely prepared to agree with Spiegelberg and Dr. Conrad. The traction of the vagina might come in as a factor in the course of the disease, but the initiatory stage was, he believed, congestion and increased weight of the uterus. These cases were rare in women who had not borne children; they almost all began after childbearing. The passage of the child through the cervix was a violent process: the cervix was forcibly stretched open; the mucous membrane was carried down before the head; the tissues of the cervix were bruised; small vessels were torn. Then, from getting about too soon and other causes, imperfect involution resulted; the lower part of the uterus especially was increased in weight and bulk, whilst the surrounding cellular tissue, having been greatly stretched and weakened, was less able to support the uterus. Hence continued congestion and a perverted nutrition of the cervix. Small polypi on the edge of the os frequently complicated hypertrophy. Their structure was identical with that of the cervix from which they sprang.—*Lancet*, Nov. 25, 1871.

73. *The Anatomical Relations of Hypertrophy of the Cervix Uteri.*—Dr. ROBERT BARNES has taken advantage of a specimen in St. Thomas's Museum to give the following minute description of the anatomical conditions connected with hypertrophic elongation of the cervix uteri. Nothing is known of the history of the woman who furnished the specimen, except that she was advanced in years.

"The entire length of the uterus is about seven inches. The fundus and body are somewhat lower in the pelvis than natural; the body has undergone apparently very little elongation, the chief excess of longitudinal growth being spent upon the cervix. The two lips of the os uteri are much hypertrophied and somewhat everted. They form a mass covered by the everted vagina outside the vulva. That this is the result of downward growth, not of simple prolapsus or stretching, is seen in the condition of the bladder and of the ante-uterine and retro-uterine peritoneal pouches. The base of the bladder is carried down along

with the down-growing interior wall of the cervix uteri, forming a sacculated pouch below the level of the urethra, and therefore below the symphysis pubis. The urethra is also distorted into a curve, of which the convexity looks upwards, the bladder-end of it being carried downwards along with the base, so that a catheter to pass would have to be directed first a little upwards, then backwards and downwards. The body of the bladder is enormously enlarged; that is, its capacity is greatly increased, but its walls are not materially thickened. The change seems to be simply distension, probably the consequence, not of actual obstruction to the passage of urine, but to a habit of long voluntary retention acquired through the desire to avoid the irritation caused by the dribbling of urine over the protruded mucous membrane of the everted vagina. The fundus rose as high as the umbilicus, and considerably higher than the fundus of the uterus. The peritoneum, descending behind the abdominal wall, is reflected upwards over the bladder at a point about two inches above the symphysis pubis. It descends behind the bladder quite down to a point on a level with the sacculated pouch of the bladder; that is, below the level of the lower margin of the symphysis pubis. Rising over the fundus uteri, the membrane descends behind, forming a Douglas's pouch quite below the vulva. The only part not much disturbed is the rectum. Of course there is no apparent vagina, since the down-growing os and cervix uteri have carried the vagina before them, completely everting it and turning it into an investment of the protruded parts.

"The specimens and the drawing exhibit very clearly the danger of amputating the hypertrophied cervix. It would not be possible to remove more than a portion of the os without opening the retro-uterine peritoneal pouch. It also explains the difficulty commonly encountered in keeping the protruded parts inside the pelvis by pessaries. The drawing exhibits the relations of the bladder, uterus, and rectum, exactly as they were found; that is, in apposition with each other. There were no folds of intestine descending between them in the anterior or posterior peritoneal pouches."—*British Med. Journ.*, Sept. 30, 1871.

74. *Peritonitis in a Fœtus*.—In the *Archiv f. Gynækologie*, II. 2, 1871, Dr. OLSHAUSEN relates a case in which a female fœtus, after decapitation, was turned and delivered by the feet. The fœtus was found to be labouring under generally diffused peritoneal inflammation, with adhesions between all the lower abdominal organs, with extensive effusion of lymph enveloping the ovaries and uterine appendages. There was no vulva, or vagina, or lower portion of rectum. Entire absence of urethral orifice. The urinary bladder, uterus, and lower portion of rectum were distended by urine into three large sacs with thin parietes, connected together by a funnel-shaped canal. From absence of urethra, the urine consequently found a ready passage into the cavity of the uterus, and by its pressure had so far dilated the Fallopian tubes as to escape into the cavity of the abdomen, giving rise to diffused peritonitis. At the time the autopsy was made, the tubes were so completely clogged with effused lymph that no opening remained at their abdominal extremities.—*Centralblatt f. d. Med. Wissenschaften*, Oct. 7, 1871. D. F. C.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Singular Effects of the Hydrate of Chloral. Reported by O. H. SEEDS, M.D., of Columbia, Texas.

October 25. I have under treatment Mrs. J. N., æt. 26, who has had leucorrhœa ever since puberty, accompanied with more or less dysmenorrhœa; but she has suffered more from the latter since marriage, five or six years ago. She is of a nervous temperament; dyspeptic the greater part of her life; has never been pregnant; during menstruation, and the suffering attending it, has taken a considerable quantity of morphia. From the excellent effects I have observed from chloral in a great number of cases, I was led to give it to her, and, after a thorough trial at different times, for several months, during menstruation, after and before, in small and large doses, I found that, in doses of twenty grains, it caused natural, quiet sleep, lasting from four to six hours, when its soporific effects begin to pass off; then follows diplopia in its worst form, succeeded in fifteen or twenty minutes by *muscæ volitantes*. To use her own language, "everything appears double, and flies or dark spots pass before her eyes." Her eyelids become red and swollen; conjunctiva injected. She complains of vertigo and nausea; but all unpleasant symptoms disappear in about the same length of time that the drug acted on her as a hypnotic. It always affects her in proportion to the quantity given. I would also state that this patient bears chloroform very well; no bad effects are produced, excepting once in a while a slight nausea some hours afterwards.

Singular Bony Tumour of Great Toe; Amputation of Toe; Complete Recovery. By JOSEPH R. BECK, M.D., of Fort Wayne, Ill.

Some time during the summer of 1864, my attention was directed to a singular growth, issuing apparently from the point of her great toe of the left foot, by Mrs. —, married, æt. 40, and in good health, who informed me that this enlargement had then existed for nearly a year, and was latterly growing much more rapidly than before. The tumour was about as large as a hazelnut, perfectly smooth, and very hard. The colour did not differ from that of the surrounding tissue, but there seemed to be considerable vascular engorgement of the whole toe.

The history of the growth, as related by Mrs. —, was this: About a year previous to my examination of her foot, she had occasion to wear a pair of shoes that were both too tight and too short (particularly the latter), and from the irritation caused by wearing them a couple of hours she dates the commencement of this trouble. She at first imagined that the toe-nail was about to become troublesome, but, after two or three months' suffering, the tumour became apparent, and was followed by some cessation of pain. The tumour continued to grow from that time to the date of my first inspection, with only periodical attacks of pain, which, however, were very severe.

When I first saw the case, after diagnosticating a simple bony tumour, I recommended its removal by amputation. This the patient would not submit to, and the matter dropped out of my mind for a time.

Some time in August of 1868 I was again asked to see the tumour, which had grown to the length of an inch, and was very troublesome. By the advice of her family physician, Dr. W——, she had for some time used the tincture of iodine externally, but without any beneficial effect whatever; and she had on her own account used other applications in the way of embrocations. I saw the case this time with two physicians, who were of the opinion that the growth should not be interfered with, inasmuch as a cancerous diathesis was supposed to exist in some of the collateral branches of the patient's family (some relatives of hers had died from what were *supposed* to be cancerous affections), and if even this growth should prove not to be carcinomatous, yet there was danger that its removal might arouse some latent cancerous diathesis. My opinion was again for the diagnosis of a benignant bony tumour, and an immediate removal; both of which were, however, overruled, and the patient again tried palliatives for a season.

On the 22d of February, 1869, I again saw the tumour, which had by this time grown to the length of an inch and a half, was about an inch in diameter, cylindrical in shape, and extending in width from the plantar surface of the toe up squarely against the under surface of the nail. The latter was perfectly healthy, and the tumour itself differed only in appearance from the rest of the foot by presenting a darker colour along its dorsal surface, and by being somewhat discoloured by iodine. The pain was now very severe when the foot was used, and was lancinating in its character, but did not seem to shoot back into the foot. Dr. W—— and I saw the case together on the 23d, and, at the request of the patient, I removed the toe, at a point midway between the first and second phalangeal articulations.

A careful examination of the tumour revealed the following: Section lengthwise through toe and tumour showed the latter to consist of a perfectly natural growth of bone, surrounded on all sides, except the base, by periosteum, and only united to the end of the phalanx by a divisional septum of fibro-cartilaginous tissue, which, under a moderately high power of the microscope, was shown to have been the basement membrane from which the new growth of bone took its departure. This fibro-cartilaginous membrane was undoubtedly once the covering periosteum of the end of the phalanx, and the irritation produced by the short toe must not only have stimulated its action as periosteum, but also have converted it into fibro-cartilaginous tissue. A longitudinal section of bone, under the microscope, revealed the fact that the bone-cells were in every respect perfectly normal, and that no difference existed between those of the toe and those of the tumour, except that those of the latter were more vascular and less compact than those of the former.

Under the use of warm water-dressing, the wound speedily healed, and the patient does not experience the slightest inconvenience from the operation.

This is an excellent illustration of how slight a cause will sometimes not only impair nutrition, but actually pervert it.

Description of a Knife for Operations on Club and Inverted Nails.
By J. STOCKTON HOUGH, M.D., of Philadelphia.

Having had occasion recently to do the *palliative* operation for con-

genital club-nail, in a lady (where the nails had, by irritation produced by pressure, caused reflex paralysis), and not being able to find a knife exactly suited to the operation, I devised the one described and figured below.



The *blade* is short, that it may be more easily controlled; the extremity being narrow, that it may be easily turned at an angle to the surface to be cut; and, most important of all, it is probe-pointed, that it may not wound the tissues beneath. The cutting edge is on a line with the centre of the handle, which renders it less liable to turn in the hand. The blade is continued through the handle, and terminates at the opposite extremity, like the scalpel handle.

The *handle* is bulky, and will not turn in the grasp. This is a great desideratum in a knife for this purpose, as it renders it much more controllable than an ordinary scalpel. On the back of the blade is a *scraper*, to level the inequalities, and reduce the thickness of the nail (after cutting is no longer safe), and render it flexible. The scraper is not a knife-edge, but is ground flat, like a skate-runner. The knife is made by Mr. Gemrig, of this city.

2003 Walnut St., Philada., Sept. 1871.

Wound of the Innominate Artery. By R. W. ERWIN, M.D., of Athens, Ohio.

The interesting feature in this case is the length of time that intervened between receipt of injury and the termination of life by syncope and death.

On the 28th of September last, W. L. W., a man aged about 30 years, was killed in this county by a stab with a large, heavy pocket-knife, in the hands of a man above seventy years of age. The blade of the knife was from a half to three-quarters of an inch in width, and from two and a half to three inches in length. It entered transversely the body of W., immediately above the sterno-clavicular articulation of right side, severing the tendinous portion of sternal origin of mastoid muscle, passed backward and slightly to left through the sterno-thyroid muscle, divided the arteria innominata in two-thirds its diameter, close to its bifurcation into right subclavian and carotid arteries, thence through the trachea and œsophagus, terminated at a depth of a quarter of an inch in the body of a cervical vertebra. The external wound was less than an inch long, and gaped, when the body was in a horizontal position, about two lines. The blood had gushed out through the mouth and nose as well as through the external cut. According to the testimony before the coroner, W., on being struck, immediately turned and walked rapidly away. He was subsequently found at a distance of fifty-nine yards from place of injury. That he had walked the distance was evident from the profuse spurts of blood on the ground, marking his way. The hemorrhage may have been checked in some measure by his hand and by flexure of the neck, but that he should walk so far, and avoid inequalities of ground (which he did, as shown by his footprints and blood upon the ploughed ground), is a matter of interest.

In searching for other cases, I find only one of a similar character. It

differed as to nature of cut (see *London Medical Gazette*, 1832, vol. x. p. 183), and the victim must have suffered fatal syncope much earlier than in the present instance. The wound was by a knife, the incision being seven inches long and three inches deep, dividing the trunk of the carotid artery, and all the principal branches of the external carotid and jugulars. In this state the murdered woman ran twenty-three yards, crossing in the way a bar gate three feet ten inches high.

Athens, Ohio, Nov. 6, 1871.

Difficult Labour; Twin Pregnancy; One Fœtus Blighted, the other Living. By D. NORWOOD, M.D., of Esperance, Schoharie County, N. Y.

September 8, 1870, at 7 A.M., I was sent for to see Mrs. F——, who had been in labour since 5 P.M. She was attended by a midwife, but her friends becoming alarmed, called me in. I found her nearly exhausted, and much depressed in mind, from a firm conviction, as she expressed it, "that there was something wrong." Upon further inquiry, she said that since the third month of her pregnancy she had had strange feelings, and that her health had been very poor, while in all her previous pregnancies it had been excellent. She had applied to several physicians, and they regarded it as a temporary derangement of the stomach, consequent on gestation; had prescribed carminatives and mild laxatives, but without benefit. On making an examination, I found the child firmly impacted in the pelvis, with the left arm and shoulder presenting (the position being the left cephalo-iliac). Her pains at this time were trifling and irregular, but, under the influence of encouragement and stimulants, they rapidly increased in strength and frequency, and in an hour and a half, with manual assistance, she was delivered of a healthy male child, weighing eight pounds, by spontaneous pelvic evolution.

The child was resuscitated with difficulty. The uterus contracted promptly, and the placenta was removed in thirty minutes. On examining the placenta, I found it to be a double one, or rather two distinct placentas, united by a membranous bridge, but without vascular connection. One placenta was of the usual size; the other about one-third that of the first, with the membranes intact, very dense, and of a white, fibrous appearance, and so contracted that they showed plainly the outlines of a fœtus underneath. Upon making a section of the membranes, I found a fœtus of apparently three to three and a half months. There was no offensive odour or other sign of putrefaction. The mother made a good recovery.

This case is interesting—

First. From the absence of hemorrhage, local discharges, etc. The only trouble was an irritable stomach and "strange feelings," which the patient complained of, but could not describe.

Secondly. The prognosis in spontaneous evolution is unfavourable to the mother, and peculiarly so to the child. According to Velpeau, in 137 cases there were 125 children stillborn. In this case the conditions were very favourable; the mother being a large, healthy woman, pelvis very large and roomy, and this being her sixth pregnancy, her children always being of large size, and her labours comparatively easy.

Thirdly. From showing a case of twin pregnancy proceeding to the third month; then one fœtus becoming blighted, and the other proceeding to full term, and being born a strong, healthy child.

Case of Poisoning from Opium, and its Treatment by the Hypodermic Use of Belladonna. By HASFORD WALKER, M.D., of Marion C. H., Marion County, South Carolina.

On the night of July 24, 1871, I was called in great haste to see a patient who had swallowed inadvertently a large quantity of a concentrated tincture of opium, equivalent to about six or eight grains pulv. opii. I found the patient (a young girl of fifteen years of age) completely comatose, and, on opening the eyes, and placing my finger on the conjunctiva, there was no sensibility whatever evinced. The pupils were very much contracted, the respiration stertorous and difficult, the pulse full, slow, and labouring, a dark suffusion of the countenance, and an almost total absence of sensibility to external impressions.

I gave without delay, but with extreme difficulty, on account of the almost paralyzed condition of the muscles of deglutition, emetics of mustard and ipecac, followed by copious draughts of warm water, tickling the fauces and throat with feathers, and, in fact, doing all that is usually done in such cases. Vomiting not being produced, and being, unfortunately, without a stomach-pump, I determined to have recourse to the hypodermic syringe, relying upon the antidotal power of belladonna. I administered hypodermically, in solution, one grain and a half of the alcoholic ext. belladonna, and with magical effect, the pupils, from a state of extreme contraction, became dilated, and copious emesis followed in a very few minutes.

As soon as the contents of the stomach were evacuated, the patient being very much prostrated, I administered strong coffee and stimulants, both hypodermically and by the mouth, and in the short space of two hours from the exhibition of the poison she had sufficiently recovered to recognize and speak to those about her.

She suffered no inconvenience as a result of this treatment, except a slight degree of inflammation, for a day or two, from the punctures made by the use of the hypodermic syringe, which readily yielded to treatment by cold applications, &c.

This case affords a striking example of the physiological antagonism existing between belladonna or atropia, and opium or its alkaloids, or *vice versa*, particularly when administered by the hypodermic method, and demonstrates to my mind the great benefit to be derived from its use in such cases.

DOMESTIC SUMMARY.

Bromide of Calcium.—DR. WM. A. HAMMOND calls attention (*New York Med. Journal*, December, 1871) to this article. He states that during the last few months he has used it in a number of cases in which the bromides were indicated, and is satisfied of its great efficacy.

"The dose," he says "is from fifteen to thirty grains or more for an adult. It is especially useful in those cases in which speedy action is desirable, as, owing to its instability, the bromide is readily set free, and its peculiar action on the organism obtained more promptly than when either of the other bromides is administered. Chief among these effects is its hypnotic influence, and hence the bromide of calcium is particularly beneficial in cases of delirium tremens, or in the insomnia resulting from intense mental labour or excitement.

"Thus, I gave a gentleman, who, owing to business anxieties, had not slept for several nights, and who was in a state of great excitement, a single dose of

thirty grains. He soon fell into a sound sleep, which lasted for seven hours. The next night, as he was wakeful, I gave him a like dose of bromide of potassium, but it was without effect, and he remained awake the whole night. The subsequent night he was as indisposed to sleep as he ever had been, but a dose of thirty grains of bromide of calcium gave him eight hours' sound sleep, and he awoke refreshed and with all unpleasant cerebral symptoms—pain, vertigo, and confusion of ideas—entirely gone.

"In a number of other instances a single dose has sufficed to induce sleep, a result which very rarely follows the administration of one dose of any of the other bromides.

"In those exhausted conditions of the nervous system attended with great irritability, such as are frequently met with in hysterical women, and which are indicated by headache, vertigo, insomnia, and a mental condition of extreme excitement, bromide of calcium has proved in my hands of decided service. Combined with the syrup of the lacto-phosphate of lime, it scarcely leaves anything to be desired. An eligible formula is—R. Calcii bromidi $\mathfrak{z}\mathfrak{j}$; Syrup. lact. phos. cal. $\mathfrak{z}\mathfrak{i}\mathfrak{v}$. M. ft. sol. Dose, a teaspoonful three times a day in a little water.

"In epilepsy I have thus far seen no reason for preferring it to the bromide of potassium or sodium, except in those cases in which the paroxysms are very frequent, or in cases occurring in very young infants; of these latter, several, which had previously resisted the bromide of potassium, have yielded to the bromide of calcium. It does not appear to cause acne to anything like the extent of the bromide of potassium or of sodium."

Quinia as an Oxytocic.—In our preceding number, p. 570, we noticed the experience of M. Monteverdi, as to the action of quinia on the uterus, and we may add that Dr. Sayre (*American Practitioner*, May, 1871) has advanced a similar view. Dr. F. A. ASHFORD (*National Medical Journal*, Oct. 1871), on the contrary, maintains that quinia, given in medicinal doses to pregnant females suffering from malarious diseases, *does not* tend to produce abortion or induce premature labour. "This continued form of malarial fever," he says, "when treated timidly, becomes the most dangerous, for its prolonged presence soon breaks down the powers of the constitution, and a low type of fever results, which many call, and unfortunately treat, as 'typhoid fever,' whereas, in fact, it is purely malarial in its nature, and succumbs readily to a vigorous and fearless use of quinia. If pregnancy exists, so much the more earnest should be our endeavours to cut short its career, and to wait until the fever abates is not only unnecessary, and a sacrifice of valuable time, but I know of no better diaphoretic and febrifuge than full doses of quinia. The pulse will be diminished in direct proportion to the dose, as has been already shown by the experiments of Briquet by means of Poisseuille's hæmadynamometer.

"That quinia is emmenagogue indirectly, there can be no doubt, and in chlorotic females its use in connection with iron is invaluable, or in any depraved condition of the blood dependent upon malarial poisons or defective innervation, but I have yet to meet with a case where I could trace, even remotely, any uterine action consequent upon its exhibition. On the other hand, no one can question but that malarial poison does often incite to abortion and miscarriage, to say nothing of its blighting effect upon the fœtus and the cachexia which it induces in the mother."

Dr. A. says he cannot speak with reference to the use of quinia in health, but "there is far more reason to fear abortion, miscarriage, or death of the fœtus from unchecked malarial diseases and their withering blight."

Dr. A. further says that Dr. Wm. Lee informs him that he gives "quinia to pregnant women just as he does to others, without any regard to that condition, and that he has yet to know of an instance in which it resulted unfavourably."

It is very desirable to have the experience of other practitioners in regard to this matter.

Carbolic Acid in Intermittent Fever.—In our last number, p. 553, we noticed the assertion of Dr. Treulich that he had found carbolic acid effectual in the

treatment of cases of intermittent fever in which quinia had failed. Dr. L. P. YANDELL, Jr., states (*American Practitioner*, Oct. 1871) that he has found, after trial on two several occasions, that carbolic acid is utterly valueless for the cure of intermittent fever.

Cæsarean Operations performed in the United States.—Dr. ROBT. P. HARRIS states (*Am. Journ. Obstetrics*, Nov. 1871) that he has discovered the localities and operators of about 70 cases of Cæsarean operation performed in the United States, of which 39, or nearly 56 per cent., recovered. He gives a table exhibiting the important points of 59 of these cases, of which 52 per cent. recovered. The colour of the women is noted in 57 cases, of which 30 were whites, and 27 blacks. Of the former, 15 recovered and 15 died; of the latter, 15 recovered and 12 died. Twelve white children were saved and 17 perished, against 14 blacks saved to 13 lost. This greater mortality in the white children goes to show that the preponderance of loss in the white women was due rather to the gravity of their cases prior to the operation than to any ethnological cause that might be presumed to occasion it. Almost all the cases are from the lower walks of life.

Ovariectomy in a Child Six Years and Eight Months Old.—A case of dermoid cyst of the right ovary in a child of six years and eight months old, in which ovariectomy was performed by Dr. W. B. BARKER, of Higginsport, Ohio, is reported (*Philadelphia Med. Times*, Nov. 1, 1871) by Dr. J. Ewing Mears. This is, we believe, the earliest age at which the operation has been performed. The patient made a good recovery.

Laceration of the Perineum and Urethra.—The following interesting case of this is recorded (*Chicago Med. Examiner*, October, 1871) by Dr. E. R. WILKARD, of Wilmington, Ill.

Before daylight on the morning of December 29, 1870, Mr. C——, the engineer at the R shaft, left the engine-room for the purpose of oiling some of the machinery. When near the shaft, his lantern "blew out," and supposing himself some distance from the opening, he continued to walk forward until he stepped into the shaft. The cage being at the bottom at the time, he fell astride the crane, some sixty feet below, severely lacerating the perineum and urethra, besides producing severe and extreme contusion of the testicles and soft parts about the nates and anus. The attending physician, Dr. Payne, saw the patient soon after the accident, and immediately made cold applications to the parts. In a few hours he was again summoned for the purpose of relieving the bladder, as it was found the patient could not micturate. After making several ineffectual attempts to pass the catheter, I was called in consultation. Upon arriving, I found the parts so contused, ecchymosed, and infiltrated with urine, together with the œdematous swelling, as to have the "feel" and appearance of jelly. The bladder was also found distended to its utmost capacity. This I attempted to relieve by a medium-sized catheter; failing in this, I resorted to a number six, and after introducing it down to the point of injury in the urethra, I carefully enlarged the opening in the integuments, dissecting down to the urethra sufficiently to introduce the fingers, by which, after long and careful manipulation, I succeeded in introducing the catheter. This was made fast and retained for a number of weeks. Meantime the bladder was frequently syringed out with lukewarm water, water-dressings continued to the parts, and anodynes given whenever necessary to relieve pains and procure sleep. From this time the patient rapidly improved, and the extensive sloughing was soon replaced by healthy granulations.

Autopsy of an Ischiopage.—In our number for January last (pp. 299–300) will be found a brief notice of a double monster born in Ohio, and which has since been exhibited in several eastern cities. Dr. Ainsworth furnishes to *The Boston Medical and Surgical Journal*, October 5, 1871, the following history of the fatal illness of the children:—

"While on exhibition in New Jersey, the larger child suffered an attack of

cholera infantum, the smaller one remaining in perfect health. At this time the characteristic evacuation from the bowels of the sick child would be followed by a healthy one from the other, who was lively and playful. After recovery, and while on their way to Boston, the small child was taken with the same disease, which continued growing worse for four days, when it died at 2 P. M. At about 8 o'clock on that day, the other, which had appeared well in every respect, began to show signs of uneasiness, failed rapidly, and it died about three hours after the other. While struggling in death, the increased action of the diaphragm seemed to partially resuscitate the dead child, so as to occasion feeble respiration and action of the heart, with opening of the eyes and gasping for breath. This lasted for a few minutes, and ceased at the death of the large child."

Dr. Ellis furnishes the following account of the autopsy:—

"About twenty-four hours after death a cast was taken, and the body was injected with a preservative solution by Drs. F. S. Ainsworth and C. B. Porter.

"Autopsy, thirty-eight hours after death.—Dr. Ainsworth made accurate measurements of every part, but, being obliged to leave, the examination was conducted by Dr. C. Ellis, with the assistance of Drs. C. B. Porter, H. H. A. Beach, and R. H. Fitz. There was *talipes varus* of the right foot. The length of the bodies, from vertex to vertex, was twenty-nine inches. The fused leg measured, from trochanter to malleolus, eight and one-half inches; around the thigh, eight and one-half inches. The leg corresponding with the smallest child was smaller than the other.

"No proper *umbilicus* was seen, but in the position of this was a kind of superficial cicatrix an inch or more in diameter. This appearance was connected with an attack of erysipelatos inflammation of the part soon after birth, followed by sloughing. Both *aortas* were found in the usual position, and the preservative fluid passed very readily from the aorta of the largest child into all the vessels of the smaller.

"The *round ligament* was in its usual position in each liver, but the vessels soon subdivided, and could not be traced as far as the umbilical region, or, if so, the branches were exceedingly small, and spread out in a fan-shaped expansion of peritoneum. The *lungs* were more subdivided than usual, and on the free edges were several auricular appendages. The *thoracic organs* were in other respects normal. The *livers* presented a number of supplementary lobules and fissures, but were of the usual size. The *spleens* occupied their normal positions in each child, and were, in every respect, normal.

"In the small child, instead of the layers of peritoneum which extend downwards to form the anterior layers of the *great omentum*, there was a fold attached to the large curvature of the stomach, but half an inch broad. In the large child this fold extended to the colon, as is usual, and formed below a free, thin layer, which represented the great omentum. The *stomachs* were in their usual positions, but both were so affected by cadaveric softening that they were torn in their removal, though handled with ordinary care.

"The *small intestines* were fused at a point twenty-five inches above the ileo-cæcal valve, that of the smaller child being considerably constricted for a short distance from the junction. The commencement of the fused portion formed a conical sac, with the base and sides an inch and a half in length. The *two mesenteries* of the individual small intestines continued separately over the common portion. The intestine of the larger child measured, from the pylorus to the common portion, thirteen feet three inches; that of the smaller child, seven feet ten inches. There was *one large intestine* twenty-five inches long, apparently the result of the fusion of two, as there were two appendices cæci and four longitudinal bands, each pair terminating in the appendices. Each vermiform appendix had a distinct peritoneal fold.

"The *kidneys*, larger than those usually seen in a nine months child, lay upon the side of the common spine, corresponding with the perfect lower extremities. This arrangement gave a left kidney to the larger child, and a right to the smaller, which was also shown by an examination of the organs themselves.

"Upon the same side was a well-formed *bladder*, four inches in length and two in breadth; from the fundus of this a *urachus* extended upwards towards the

umbilicus. The *hypogastric arteries* were in their usual position. Behind this was a *uterus*, an inch long and half an inch broad at the fundus, with perfectly normal appendages. Fallopian tubes two inches long. Left ovary one inch; right, three-fourths of an inch in length.

"Lying beneath the intestine, and attached to the posterior wall of the abdomen, was a somewhat *conical cyst*, with quite an irregular outline, owing to the sacculation of various parts. The broadest portion, towards the fused limbs, filled the space between the cartilages of the ribs, while the opposite side was only two-thirds as large. It weighed, with its contents, 3 lbs. 6 oz. avoirdupois, and contained about two pints of opaque liquid, in which were floating soft, white masses, or flocculi, composed of epithelium. On raising the free portion towards the fused limbs, there were seen two well-developed ovaries, three-fourths of an inch in length, attached to the wall of the sac by ovarian ligaments; also two Fallopian tubes.

"A careful dissection of the cyst from the tissues which bound it to the posterior wall showed a *second cyst* lying in and projecting from a small cavity formed by bones which resembled the ossa innominata of the fused limb. This was connected with the large sac by a firm, white cord, from two-thirds of an inch to an inch in length and half a line in diameter. This gradually tapered towards the upper extremity. In the lower portion there still remained a narrow canal, as was shown by the escape of a drop of clear fluid after incision. The small sac was carefully dissected from the pelvis, with what appeared to be a mass of fat; but after removing the latter a *third cyst* was found, the contents of which could be forced into the second through a very narrow canal. The uppermost of these cysts was, perhaps, half an inch in length, the lower somewhat larger.

"Attached to, or rather imbedded in, the posterior wall of the largest cyst first described, near the crest of the ossa innominata of the fused limb, were two somewhat *oval, reddish bodies*, the largest seven-eighths of an inch in length, the smallest five-eighths.

"This series of sacs and the small, firm, reddish nodules resembles nothing in the fully developed body, but probably represented certain organs, the development of which was arrested or in some way perverted. If we revert to the well-developed organs about which there can be no doubt, we find two complete sets of thoracic organs, two livers, two spleens, two stomachs, two small intestines fused below, and one large intestine presenting some features belonging to two; also one complete set of pelvic organs, and on the opposite side two ovaries and two Fallopian tubes. To complete the double series, we need two kidneys, a bladder, and a uterus. A thorough examination of these doubtful formations by Dr. R. H. Fitz, gave the following results:—

"On microscopic examination, the two reddish bodies were found to contain straight and convoluted tubules, with Malpighian bodies. No duct could be found connecting these bodies with the cavity of the cyst. The inner surface of the *large sac* was mostly smooth and serous in appearance, with many reticulated fibres visible beneath the surface. Some portions of this were covered with an opaque, white, wrinkled, almost nacreous-looking coat. This was easily detached, friable, and left a smooth surface when raised. This consisted of epithelium, varying in character between the tessellated and moderately cylindrical forms. Projecting from the inner surface was a conical body, about one-fourth of an inch in length and perhaps a line in diameter, terminating in a red, rounded extremity as large as a mustard seed. The base of this corresponded with the termination of the white cord previously described, which connected this large cyst with the other smaller ones. The surface around it had a peculiar reticulated appearance over an area two inches square, this was due to the presence of a number of pouches, with free circular openings from two to four lines in diameter. On passing a probe into these, the parietes were found to extend laterally in the walls of the sac for a considerable distance, in several instances at least half an inch. In the immediate neighbourhood of the open pouches were found three or four round yellow patches, rather smaller than the head of a pin. Pressure being applied, a yellow semi-solid substance was set free, which was made up of numerous nuclei of the size of white blood corpuscles,

and large cells often of the size of mucous corpuscles. The largest of these, though still containing an apparently normal nucleus, were quite homogeneous and translucent. The nuclei were faintly granular. These were contained in pouches, smaller, but otherwise similar to those previously mentioned. The wall of the large sac contained spindle-shaped muscular elements.

“This large sac was probably the bladder, judging from the character of the epithelium and the presence of muscular elements. The pouches corresponding in position with the racemose glands at the neck of the bladder were apparently due to retained secretion.”

“The correctness of the conclusion arrived at by Dr. Fitz is shown by the following chemical examination of the contents of the cyst by Dr. E. S. Wood. He says: ‘The clear fluid was of a light straw colour, sp. gr. 1.014. *Reaction* acid to test-paper. *Sediment* very abundant, dense, white in colour, and consisting of epithelium. *Albumen* was present in considerable amount, the coagulum formed by heat occupying about one-eighth of the bulk of the liquid tested. *Chlorides* and *phosphates* were present in about the same proportions as in normal urine. *Sulphates* were present in less proportion than in normal urine. Concentrated sulphuric and hydrochloric acids produced the same colours as when reacting upon the same amount of urine in which *urophecin* and *uroxanthin* are slightly diminished. Well-defined crystals of *uric acid* were obtained after concentrating the fluid and applying the appropriate tests. These crystals responded to the murexide test. From another portion of the concentrated fluid were obtained crystals of *nitrate of urea*, after the addition of nitric acid. Thus all the constituents of normal urine were present, as well as epithelium in abnormal amount, and albumen.’

“In regard to the two other cysts, Dr. Fitz makes the following statements:—

“The smaller one contained a clear watery fluid. Its inner surface was covered with a delicate tessellated epithelium. The other contained a white opaque semi-solid material, made up of fat epithelium. The wall of this was formed of true skin, which bore numerous delicate hairs half an inch or more in length. By the exercise of considerable pressure, the sebaceous material could be forced into the smaller cyst through a narrow canal lying between the two.’ He concludes, therefore, ‘that the *smaller* sac is probably the uterus converted into a serous cyst by the retention of its secretion; the sebaceous cyst is probably the vagina, which, genetically, is nothing more than inverted skin.’

“The result of Dr. Wood’s chemical examination is as follows: ‘The small sac contained about 3ss of a clear and colourless fluid, which was slightly acid. Spontaneous evaporation of a portion, left, as the only residue, a number of crystals of chloride of sodium. No other substances could be detected by reagents.’ Taking into consideration all the above data, we are justified in saying that there existed representatives of the missing organs, either undeveloped or in some way modified.

“The spines were curved as they approached each other, and fused at the first sacral vertebra, which was broad and curved. The limb formed by the fusion of two, was attached to the body by muscles only. Large nerves extended from both spinal columns into the rudimentary pelvis, and to other parts.

“No more complete examination of the skeleton could be made, as the body was removed.”

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All articles intended for the *Original Department* of this Journal must be contributed to it *exclusively*. The insertion elsewhere of *abstracts* of papers *prior* to the publication of the entire paper in this Journal is a violation of this rule. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, are requested to forward them before the 1st of May.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

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St. Thomas's Hospital Reports. New Series, Vol. II. London: J. & A. Churchill, 1871.

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Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M.D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, *London*; or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay.

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The advertisement sheet belongs to the business department of the *Journal*, and all communications for it must be made to the publisher.

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THE
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ART. I.—*Remarks on the Pathological Anatomy, Causes, and Treatment of Rickets.* By JOHN S. PARRY, M.D., one of the Attending Accoucheurs to the Philadelphia Hospital.

IN the January number of this Journal, we pointed out the frequency and symptoms of rachitis. As very diverse views are still promulgated in regard to the subjects to be discussed in this article, it was thought that some remarks upon them might not prove uninteresting. Various opinions have been expressed in regard to the nature of the bone alterations. Virchow,¹ Gerdy,² and Vogel³ deny that there is any true malacia. Willshire,⁴ Jenner,⁵ Smith,⁶ and Niemeyer⁷ all assert that there is not only deficient ossification of the growing bones, but that in addition to this there is softening and resorption of the calcareous salts, which have already been deposited.

The decision of this question is of primary importance, for, so long as the point remains unsettled, an effectual bar is reared to our further progress towards the truth.

If Jenner, Smith, and Niemeyer are correct, we cannot see wherein Beylard,⁸ Trousseau,⁹ and others have erred in believing mollities ossium and rachitis to be one disease.

The distinction between these depends upon this point, and while we believe that the two affections are associated as regards their nature, we

¹ Virchow's Archives, Band 5, heft 4; and Edinburgh Med. Jour., April, 1854.

² Brit. and For. Med.-Chir. Review, July, 1856, p. 67.

³ Dis. of Children, New York, 1870, p. 521.

⁴ Brit. and For. Med.-Chir. Review, July, 1856.

⁵ Med. Times and Gaz., May 12th, 1860.

⁶ Wasting Diseases of Children, Phila., 1870, p. 89.

⁷ Prac. of Med., N. Y., 1869, p. 507.

⁸ Du Rachitis, etc., Paris, 1852.

⁹ Clinique Medicale, vol. iii., Paris, 1865.

cannot but think that they are essentially different, and while the distinguishing feature of mollities ossium is the resorption of the calcareous salts from the fully formed bone and consequent softening of it, we as emphatically believe that in rickets the lesion consists simply in deficiency of ossification, the already formed bone remaining unaffected.

This opinion is supported by the pathological characters of the disease, and the natural history of the development of bone. The union of the animal and earthy substances of this tissue is so peculiar that we have every reason for believing that either one of these morbid processes may go on alone, for the earthy salts, as we well know, may be separated from the animal basis without destroying the shape of the skeleton, proving that there is something in the connection between them which cannot be explained by ordinary chemical laws. There seems to be no evidence that the animal portions of the bones are involved in the rachitic process, though it must be remembered that Jenner¹ seems to think that they are, and that Lehmann and Marchand² have asserted that there is an alteration in the chemical composition of these structures. This observation, however, has not been confirmed by other investigators.

The appearances presented by a rickety bone vary according to whether it is long or flat. As the alterations in the former are the most obvious during life, they may be advantageously studied first, and in doing so it is to be remembered that we are dealing with a growing and developing bone, and that, aside from the curvature of it, about which nothing will be said, its growth may be involved in two ways: first, through the cartilages, by which it is increased in length; and secondly, through the periosteum, by which it is augmented in thickness. The most striking external character of one of these bones is the epiphysial enlargement, the degree of which varies in different cases. If the disease is well developed, the contiguous surfaces of the diaphysis and the articular extremity of the bone appear to be approximated, as though the tissue between these points had been compressed by two opposing forces. In some instances, the structures along the epiphysial line give way, and the part looks as if the soft tissue had been squeezed out. This is an important alteration of the disease, and affords an explanation for some very characteristic changes in the adult rachitic skeleton. In some of these, the epiphysial lines are peculiarly knotty and irregular, the bulging extending partially or wholly around the bones, as Mr. Humphry³ says, looking "precisely as if the bones, when in a soft state, had been squeezed out at these parts by pressure made upon the two ends." This material may become calcified in this abnormal position, and thus interfere still farther with the growth of the bone. Bulging at these epiphysial lines, which is not by any means a constant pathological character, but rather an accident of the disease, is to

¹ Medical Times and Gazette, 1860, vol. i. p. 621.

² Ibid.

³ Trans. Medico-Chir. Society, London, 2d series, vol. xxiii. p. 314, 1862.

be distinguished from the enlargement of the extremities of the bones, which is a uniform increase in size, which occurs only in infancy, and which has always disappeared in the skeletons of adults, who have been rachitic when young. On the contrary, bulging of the epiphysial lines is usually, if not always, permanent. It is most frequently noticed at the distal extremities of the femur and radius, and the proximal extremity of the humerus, and I have no doubt that it is produced as Mr. Humphry suggests,¹ by pressure upon the opposite extremities of the bone. The study of these changes of the epiphysial lines is not altogether without interest, as the alteration affords an explanation for some of those cases in which the rachitic shortening of the extremities is greater upon one side than it is upon the other. It may serve also to explain other deformities of the disease, as certain cases of knock-knee, in which the epiphysial line has given way upon one side and not upon the other.

If the periosteum be stripped from one of these long bones, as well as the flat ones, it is apt to appear slightly thickened and more vascular than in health, though in uncomplicated cases it never presents any evidence of inflammation, though Meyer has asserted that it does.² After the membrane is stripped off, small portions of the newly-formed and morbid bone are found adhering to it. Immediately beneath the periosteum, this recently-formed bone presents a peculiar appearance. It is soft, spongy, and succulent, filled with a soft "pumice-stone" material, which is of a purple-red colour. The colour is developed just in proportion to the severity of the disease.³ The tissue thus formed is very easily cut or scraped away with a knife, and resembles the diplôic structure of the bones of the skull.

These changes are better marked in the flat bones, and especially in the frontal, occipital, and parietal, than they are in the shafts of the tubular bones, but it is important to remember that they are not by any means peculiar to the former, though much more prominence has been given to them in connection with the cranial changes, than with those which occur in the diaphyses of the long bones. While the rachitic process tends to attack certain parts more than it does others, or at least while it makes itself more apparent in some parts than it does in others, it affects ossification wherever it is going on, whether from membrane or from cartilage.

Viewed as a whole, the shafts of the long bones are diminished in circumference. Writers are not by any means agreed in regard to the truth of this statement, as some assert that they are thicker than normal. Willshire,⁴ Rindfleisch,⁵ and Ormerod,⁶ however, take the opposite side of the question, an opinion with which the writer agrees in the main. In

¹ Loc. cit.

² Henle and Pfeufer's Journal, vols. iii., vi., new series, quoted by Willshire.

³ Vogel, Diseases of Children.

⁴ Op. cit.

⁵ Text-Book Path. Histology, Phila., 1872.

⁶ St. Bartholomew's Hosp. Reports, vol. vii.

our previous article,¹ attention was called to the fact that the growth of the whole skeleton is interfered with in this disease, and that in well-marked cases all of the bones are short and poorly developed. Not only are they short, but, with few exceptions, they are likewise thin. In some instances, owing to the rapid formation and imperfect ossification of the large quantity of the spongy new tissue, they appear to be thickened, though the whole amount of osseous substance is below rather than above the normal standard. In consequence of the accumulation of this soft porous osseous tissue, and the deposit of lime-salts in it during the progress of recovery, the bone sometimes becomes much thicker and heavier than is normal, though this is not one of the essential characters of the disease. Excepting the occipital, the bones of the cranium are nearly always thickened in rachitis, and after recovery they are often found greatly hypertrophied. Sir Charles Bell speaks² of "rachitic skulls which were seven-eighths of an inch in thickness," and mentions the importance of remembering this fact during the operation of trephining an individual who has suffered from this disease during infancy. The writer has seen skulls almost as thick as those described by Bell, and has repeatedly examined the bodies of children four or five years of age, the thickness of whose skulls exceeded that of a healthy adult cranium.

The cause of the difference in the thickness of the long and flat bones in this disease is the difference in the rate at which the absorption of old bone is going on. In some of the flat bones, as in the scapula, this is so modified as to form no counterpart to the same process in the tubular bones. In the cranium the resorption which is constantly going on from the interior of the skull is so modified, and is intended to effect such different ends, that it influences the progress of the disease which we are discussing. Herein lie the apparent differences of changes which are identical in nature, and had these facts been remembered, various discussions in regard to the nature of cranio-tabes, and other cranial alterations of the disease, would not have occurred. It is to be remembered that it is the calcification of the new bone which is arrested in rachitis, while the periosteum continues to prepare the materials for the reception of the calcareous salts, just as in health. At the same time that this is going on, the resorption from the interior of the long bones, and the formation and increase in size of the medullary cavity, are proceeding normally. For this reason the tubular bones become light and fragile, and their true osseous tissue is diminished and not increased. If a section of one of these bones from a rachitic child, who has reached the latter stages of the disease, be made, the compact tissue will be found near the centre of the bone, while on the exterior is a mass of soft, spongy material.

The appearances presented by a longitudinal section of one of the long

¹ Amer. Journ. of Med. Sciences, Jan. 1872.

² Lancet, April, 1841.

bones are very important. It is not our purpose to describe them very fully. This has been done by Virchow,¹ Rindfleisch,² and others. The most noticeable alterations, and those which are characteristic of the disease, are to be found along the lines of ossification at the epiphysial extremities of the bones. In healthy persons, this process (ossification) progresses along the extremity of the diaphysis in a perfectly straight line, which is clear and sharply defined, though so narrow as to be little more than visible to the unaided eye. In rachitic bones this line of ossification instead of being straight is very irregular, and the "proliferating zone" of the cartilage is enormously thickened, so that it will measure several lines in width. Moreover, the medullary spaces may project beyond the line of ossification into the layer of proliferating cartilage.

Now, this change is not equally well developed at the epiphysial extremities of all bones, nor is it probable that it indiscriminately manifests itself at either the distal or proximal extremity of a bone. The word "probable" is intentionally used in this place, for the opinion which we are about to express is the result of recent observations, and, though rickets is a frequent disease, the writer may not be able, for some time, to obtain further post-mortem evidence. Jenner³ has asserted that rachitic epiphysial alterations are as apt to involve the deep-seated as the superficial joints. The writer's own belief is, that the extremity of the bone *from which* the nutritious artery is directed is the most severely, the most frequently, and the earliest involved. We would therefore find the upper extremity of the humerus more frequently affected than the lower, while precisely the opposite is the case with the femur, the distal end of this bone being the one which is most frequently involved. In the humerus the nutritious artery is directed downward, while in the femur and radius it runs upward. In the tibia it runs downwards, and the proximal end of this bone is the one which is usually involved first and most severely.

It is doubtful, however, whether this law, if it be found to apply generally to the disease, is the result of the manner of the distribution of the blood and a difference in the amount of that fluid received by the two extremities of the bone. Because the nutritive artery takes a certain direction, it does not follow that the extremity from which it is inclined receives less blood than its fellow. From the experiments of Mr. Humphry,⁴ the direction of this vessel is determined by the unequal growth of the two extremities of the bone. Whatever may be its course as regards the bone, it always slants in the same direction in the same bone, and always runs towards that end at which the epiphysis is first united to the shaft. The law which governs the union of the epiphysis does not seem to be one of nutritious

¹ Cellular Pathology, Transl. by Chance. N. Y. p. 477.

² Op. citat., p. 565.

³ Medical Times and Gazette, 1860.

⁴ Trans. Medico-Chirurg. Soc. of London, vol. xlv. p. 124.

supply, but rather one of the mechanical wants of the skeleton. Mention has already been made of bulging of the epiphysial lines in the skeleton in this disease. Now, these are the weakest portions of the bones, and if they were situated in the middle of these they would not, for one moment, bear the strain of the superincumbent body or even that of muscular action. The consequence is, that these lines of ossification are located at the extremities of the bones, and they, with the cartilaginous portions of these, are soft and vascular, just in proportion to the rate of their growth. Hence, we find that ossification goes on most rapidly at that end of the bone, the strength of which is the least likely to become impaired by the attendant changes, and this is in all cases the broader and the larger of the two. In the humerus the disadvantages of situation and the marvellous delicacy of manipulation attained by the forearm and hand, require that the elbow should be perfected comparatively early. Consequently, we find that the proximal end of the bone grows more rapidly than the distal, and that the nutritious artery runs towards the latter. The upper extremity of the femur, as it terminates in a rounded extremity, which at an early age is placed nearly at right angles with the shaft of the bone, is taken at great disadvantage, and consequently will not bear additional weakening by rapidly advancing growth and ossification. The distal end, however, is broad and flat, receives the pressure which it has to bear directly and in the most advantageous manner; hence, at this end, growth advances far more rapidly than it does at the other. The same is true of the tibia. Its malleolar extremity is taken at a disadvantage; the upper is broader and stronger, and ossification advances most rapidly here, while the nutritious artery runs towards the distal end of the bone. These facts being remembered, it is easily seen why rachitic epiphysial enlargement manifests a preference for that extremity of the bone, away from which this vessel is inclined. It is simply because growth is going on at that point with the greatest rapidity, the natural consequence of which is that any interference with the process of ossification would appear more prominent at that than at the opposite extremity.¹

Hence, we see that nature, ever careful of her resources, and ever cherishing her work with the utmost tenderness, so guides the growth and development of the skeleton, that it is evolved in accordance with such mechanical laws as are best adapted for its protection. And so the disease, which we are discussing, we find first affects those parts which are most

¹ "Morbid action is most frequent in that part of the bone within which the area of development is the largest and most active. Thus, we see necrosis of the femur of the adolescent almost invariably occurring at the lower portion of the femur, since it is here that the greatest degree of vascularity is found. In the humerus its proximal end is under similar circumstances the one prone to disease."—Dr. Harrison Allen, "Localization of Diseased Action in the Osseous System," *Amer. Journ. Med. Sci.*, Oct. 1870, p. 407.

protected and where it will do the least damage. The extremity of the bone from which the nutritious artery is directed is softer than its fellow in the well-developed disease. It can often be compressed between the fingers or bent by the slightest force.

In healthy bones the length increases much more rapidly at the cartilaginous extremities than the thickness of the shaft does beneath the periosteum. The change in the former is, therefore, the most important alteration of the process of ossification, and its effects upon the economy of its victim are very distressing, and are unlike those produced by any other disease whatever; but, while the arrest of ossification at the epiphyses is the most important in its effects on the skeleton, the periosteal alterations are the source of immediate difficulty. In most cases the deformities which occur during the active stages of the disease are the consequences of the arrest of subperiosteal ossification, and it is only in more rare instances that distortion results from giving way in the epiphysial lines, as has been described. Another important consequence of these periosteal lesions is fractures of the bones. According to Guersant,¹ one-third of eighty cases of fractures under his care occurred in rachitic children. In only rare instances is the periosteum torn in these. In others only one side of the bone is broken, the "infracture" of some writers, and the "green-stick fractures" of others. In both instances the medullary cavity is destroyed and the medulla wounded and broken, a condition which Jacobi² suggests may be very important in its bearings upon the health of the child; since it is asserted³ that the medulla performs an important part in elaborating the blood-cells. If this opinion is proved to be correct, certain cases of rachitis will present remarkable facilities for the study of this subject, since these children are not unfrequently the victims of multiple fractures.

The minute alterations in the bones in rachitis are extremely interesting, and have been made the subject of study by Kölliker⁴ and Virchow.⁵ Both of these investigators used them to study the process of normal ossification, a subject about which there has been a vast amount of discussion, and in regard to which our knowledge is still unsettled. According to Virchow,⁶ the essential lesion of rachitis is a deficiency of calcareous salts. He believes that everything goes on normally until these should be deposited, and that the preparatory processes are naturally carried on. Jenner⁷ holds that there is not only a deficiency in the bone salts, but that there is also an error in their deposition, that is, they are thrown down in abnormal places, the osseous matter being formed in the cartilage cell as well as in the matrix. This observation, as well as his statement

¹ London Lancet, 1846, vol. i. p. 148. ² Amer. Journ. of Obstetrics, Nov. 1870.

³ Neumann, Phila., Med. Times, vol. i. p. 200.

⁴ Microscopical Anatomy, Philada., 1854.

⁵ Cellular Pathology, Chance's Translation.

⁶ Edinburgh Med. Journ., April, 1854.

⁷ Med. Times and Gazette, 1860.

that the salts previously deposited are reabsorbed, has not been corroborated by other observers, so far as we are aware.

In short, therefore, it seems that the preparatory processes of bone formation, whether submembranous or cartilaginous, go on perfectly, until just at the time when solidification should commence, when these are arrested. Humphry,¹ Kölliker,² Vogel,³ and Rindfleisch,⁴ all agree in this opinion. According to Ormerod,⁵ the bone corpuscles undergo certain remarkable changes in this disease. This author has found them to be peculiarly elongated as if two, or three, or even more had come in contact and fused at their extremities. The canaliculi from these are greatly increased in number. The origin of this condition of the bone corpuscles is a matter of some doubt.

The cause of this imperfect ossification in rachitis is a matter of interest. The absence of the carbonate and phosphate of lime being the principal characteristic of the bones in this disease, it has been asserted by some that these salts pass off from the body through the kidneys and other channels. Lehmann says⁶ that the urine of a rachitic child contains four times as much phosphates as it does in health. Marchand,⁷ Benke,⁸ and Aitken⁹ all found an excess of phosphates in this fluid, while Friedleben¹⁰ and Hillier¹¹ were unable to discover any increase in their quantity. The collection of the urine of a child as young as those who are affected with this disease is so difficult that the writer has been unable to procure a sufficient number of specimens to make his assertions on this point altogether reliable, but as far as his observations have yet gone, they confirm those of Friedleben and Hillier. He is at least convinced that cases of the disease occur in which the urine presents no peculiar or characteristic changes, and there seems to be no reliable evidence that these salts leave the body by this channel instead of being deposited in the bones.

Guersant¹² has called attention to the fact that a diarrhœa will delay the union of a fracture in a rachitic subject. The same he asserts is true of other diseases, as acute bronchitis and pneumonia, and Friedleben,¹³ as late as 1860, asserted that bronchitis was one of the causes of the disease. But those who may think that these discharges may form an outlet for these salts

¹ Medico-Chirurg. Trans., vol. ix. p. 312.

² Op. citat.

³ Op. citat., p. 521.

⁴ Op. citat.

⁵ St. Barthol. Hosp. Rep., 1871.

⁶ Schmidt's Jahrbuch, 1843, Bd. 39. S. 8. Quoted by Hillier.

⁷ Jour. fur Pract. Chemie, 1842. Quoted by Hillier.

⁸ Zur Phys. und Path. des phosph. und oxal. Kölkes: Göttingen, 1850. Quoted by Hillier.

⁹ Reynolds' Syst. of Med. vol., i. p. 775.

¹⁰ Hillier, Diseases of Children, Phila., 1868, p. 101.

¹¹ Ibid., p. 101.

¹² Phila. Med. Exam., April, 1846.

¹³ New Sydenham Soc. Year Book of Med. and Surg., 1861, p. 399.

need only be reminded of the fact that constipation¹ very frequently attends the disease during a large part of its early stage, and that it is exceedingly frequent as a precursor of the first bone changes. Nor can inflammation of the bronchial mucous membrane and its consequent discharge be looked upon as the cause of the non-deposition of the earthy constituents of the bone, for, while this is one of the most frequent and constant complications of the disease, we have seen many cases in which it did not appear until some of the unequivocal bone lesions of the affection had set in. Nor do we know that there is any evidence that the blood is deficient in the phosphates and carbonates of lime in rachitis. The results of the oft-repeated attempts to cure the disease by the administration of these salts have proved the truth of this opinion. Because the osseous changes are among the most common, the most constant, and by all means the most important of the anatomical alterations of the disease, rachitis must not be looked upon as an affection of the osseous tissue alone, for, as it has been said, there are evidences of want of growth and development in almost all other parts of the body. This deficiency in the deposit of the earthy salts in the bones can no more be looked upon as the essence of the disease than can ulceration of Peyer's patches that of typhoid fever.² It, like the latter, is a constitutional affection, and, as the lesion of the intestinal glands is the chief alteration in enteric fever, so the arrest of calcification is the most striking and the most important pathological change in rachitis.

The immediate cause of this arrest in the deposit of the lime salts is to be determined by observation of the circumstances under which normal calcification occurs, and a study of the laws which govern the process. The largest portion of the phosphates of lime in the human blood is in the serum, in which it exists as a tribasic phosphate. In the bones themselves there is a combination of the bibasic and tribasic phosphates. These salts are insoluble in water or alkaline fluids, but are freely soluble in any liquid which contains a free acid. As the blood contains free carbonic acid, Rindfleisch³ suggests that this may be the agent which keeps the salts of lime in solution. Any explanation of normal calcification is based upon some supposition or an uncertain observation, but the view of Rindfleisch is exceedingly ingenious and very plausible. According to him the deposition of lime is the result of the abstraction of the carbonic acid which holds it in solution. The circumstances under which normal calcification occurs are somewhat peculiar. Genuine osseous substance may be produced in a tissue which is well supplied with bloodvessels, but the lime salts are not deposited indiscriminately in any part of the territory supplied by one

¹ Jacobi, *Amer. Journal of Obstetrics*, Nov. 1870; and the Author, *Amer. Jour. Med. Sciences*, Jan. 1872.

² Jenner, *Op. citat.*

³ *Pathological Histology*, Phila., 1872, p. 56.

of the capillaries, but, on the contrary, they are thrown down at the points which are furthest from the vascular supply; in other words, where the circulation is the slowest, and where the solvent has an easy opportunity to free itself from the lime salts, leaving them lodged in the tissues on the margins of the nutritive territories. In rachitis peculiar opportunities present themselves for the study of the process of calcification. During the progress of the disease the new medullary spaces extend far beyond their normal limits, projecting like granulations on ulcerating surfaces at various points along the line of ossification. If a section of the extremity of the bone be made in its transverse diameter immediately through, or rather just above, the line of ossification, and this be examined under a low power, the lime salts will be found at the points which are most distant from the medullary spaces. In other words, they fall down at the margins of the area, which draws its supply from the capillary vessel which ramifies in this medullary space.

Normal calcification occurs in the same manner, and the lime salts are first deposited in those portions of the tissues in which the circulation is exceedingly slow, and which are on the margins of the nutritive districts.

In disease calcification occurs under precisely the same circumstances, and the lime salts are only deposited in abnormal situations when the circulation is arrested or goes on very slowly. Hence, we find it occurring in certain parts, as the larynx, costal cartilages, and other tissues, after a prolonged inflammation.

The application of these principles to rachitis has already been made by Rindfleisch¹ and Jacobi.² In the normal bone the circulation is exceedingly slow and the vessels but very sparsely distributed, so that everything favours the deposition of the calcareous salts. The distinguishing feature of rachitic bones, however, is the augmented vascular supply. The periosteum covering the shaft, as already stated, is thicker and more vascular than it is in health, while in no other disease do the medullary vessels extend so far beyond the ossifying line. The section of the bone, too, shows the large excess of blood which it contains. In these bones the circulation is so rapid that the carbonic acid and other agents which hold the phosphate and carbonate of lime in solution have not time to diffuse away from these salts, and hence they are carried past the depots in which they should have been lodged.

If this is true, it is plain that the most important lesion of rickets does not depend upon a deficiency of the lime-salts in the blood, nor does it necessarily depend upon the presence of an excess of their solvents in that fluid. Though the explanation just given may be ingenious, it is not yet satisfactory, for the discovery of the cause of deranged circulation in rachitic bones presents an almost equally difficult problem for solution.

¹ Text Book of Pathological Histology. ² Amer. Jour. of Obstetrics, Nov. 1870.

Whether this is to be discovered by the study of some correlated affections, is a question which is as yet undecided. Mollities ossium and rachitis have long been associated, and so closely, indeed, do they resemble one another, that many have considered them one disease. The writer has already expressed it as his opinion that they are different, an opinion which is supported by the clinical history and the anatomical lesions of the two affections. In the latter the external characters of the two are strikingly alike; in both the bones are exceedingly soft, so that in extreme cases they can be readily bent or easily cut with a knife. In both the vascular supply is greatly increased, and in both there is great deficiency of the earthy constituents of the bones. Aside from the fact that the two disorders affect persons of different ages and in totally different constitutional conditions, other distinctions are to be found in the minute anatomy of the affections. The essential lesion of rachitis is the deficiency in the deposition of the lime-salts without any change in those which have already been thrown down, while in mollities ossium these are softened and reabsorbed, and, according to Rindfleisch,¹ the first evidence of this alteration in the bone is to be found around the margins of the Haversian canals, while those portions of this tissue which are farthest from these and the medullary spaces remain normal for a longer time. Along the margin of these, the disease progresses, the line of softening being irregular. Indeed, it looks as if the blood circulating in the bone contained some agent, which was capable of effecting a chemical solution of its earthy salts.

Now, though the rachitic and the osteo-malacic processes are not the same, the latter may throw some light upon the production of the former. There is one fact which more than anything else strikes us in the study of mollities ossium, and that is its association with nervous symptoms. Insane persons are peculiarly liable to it, a fact which the frequency of fractured ribs among them fully attests.

Mr. Durham² and Dr. Pedler³ have directed the attention of the profession to this association, and suggested that there is yet some unappreciated lesion of the nervous system which is the source of the disease.

The theory that rachitis is the result of some morbid condition of the nervous system, is almost as old as the history of the disease, for Mayow⁴

¹ Op. cit., p. 594-5. Ormerod (St. Bartholomew's Reports, vol. vii., 1871, p. 41), in the main, corroborates this statement from independent observations. Speaking of a fragile rib from an insane patient, he writes: "The Haversian canals are seen to be large, and the transparency of the innermost concentric rings of the Haversian system becomes a very prominent feature. If we should happen to be using a section stained with magenta, we shall observe that these transparent rings take the dye more readily than the rest, an indication, I believe, of the removal of the earthy matter with which this dye has little affinity."

² Guy's Hosp. Reports, 1864.

³ West Riding Lunatic Asylum Med. Reports, London, 1871, vol. i. p. 172.

⁴ Tractatus duo, alter de Respiratione, alter de Rachitide, 8vo., Leyden, 1671.

asserted that it was caused by some "obstruction" in the spinal cord, an opinion which Allen¹ and Hoffman² reiterated. It is neither in the brain nor spinal cord that we are to look for the changes which are to explain the production of the essential lesions of the disease, but may there not be some morbid condition of the vaso-motor system of nerves? May it not be that paralysis of these in the young, growing, and developing bone may be the cause of the trouble? In the present state of our knowledge, no one can afford to hazard a positive opinion in regard to this, but the view seems to the writer worthy of some investigation. The manifest vascularity of the affected bones and the periosteum covering them points in this direction. This congestion is not active, at least is not inflammatory, as was suggested by Meyer³ in regard to the periosteum.

To more fully discuss the etiology of the disease, it may not be amiss to allude to one of the old theories of its causation. The deformities which result from the bending of the bones could not but lead the early writers upon this subject to contrast the rachitic process with the chemical removal of the earthy constituents of the bones, which follows their maceration in dilute acids. It is not strange that Fourcroy suggested that in this disease a substance was formed in the tissues or fluids of the body, which dissolved the carbonate and phosphate of lime just as hydrochloric acid does outside of the body. This theory has at one time or other had many advocates, and, in studying the history of the disease, it is exceedingly curious to see how many times it has reappeared, and how many forms it has assumed. We would not allude to it here, had it not been suggested, in a recent discussion at the Pathological Society⁴ of Philadelphia, that cranio-tabes, one of the manifestations of the disease, is due to the accumulation of carbonic acid in the blood which dissolves the calcareous salts in the occipital bone. This excess of the acid was supposed to result from the interference with the oxygenation of the blood which results from the bronchitis with which these children suffer. Such an opinion as this cannot be based upon clinical experience, since any one who has had favourable opportunities for the study of rachitis must have noticed that the minor forms of the disease—cranio-tabes included—are often unassociated with any respiratory difficulty whatever, while in those conditions in which the accumulation of carbonic acid is much greater than is usual in this disease, for example in cyanosis, we have no manifestation of deficiency of earthy salts in the bones. If this chemical theory of the disorder were correct, the bones should be found acid in reaction, but, according to Hillier,⁵ they are alkaline, a statement which the writer is able to confirm.

¹ Practice of Physic, London, 1741.

² Practice of Medicine, London, 1783.

³ Op. citat.

⁴ Amer. Journ. of Med. Sciences, April, 1871, p. 428.

⁵ Diseases of Children, 8vo., Phila., 1868, p. 101.

In the cases in which I have tested them, I have always found them neutral or faintly alkaline.

Some observers have taught that there is a connection between syphilis and rickets. This doctrine is as old as the history of the disease, for Glisson¹ and Van Swieten² both combat it. Boerhaave³ and Astruc⁴ supported it in their day, while in later times, Vogel⁵ and Hillier⁶ both say that syphilis in the parents predisposes the child to this disease. The writer has treated many cases of inherited syphilis in the Philadelphia Hospital, and he has never yet seen it associated with severe rickets. Indeed, he does not feel sure that he has ever met with these two diseases in the same person, though he has repeatedly examined syphilitic infants for rachitis. It seems as if one cachexia excluded the other, and while we do not say that a syphilitic child may not become rachitic, we do say that it is very unlikely to do so.

The relations of these three diatheses, the scrofulous, the tubercular, and the syphilitic, to rachitis, are exceedingly interesting. At various times, the last has been supposed to be nothing more than a form of one of the others, and even until a very recent period, scrofula and rickets have been supposed to be identical. Sir Charles Bell,⁷ Simon,⁸ Dupuytren,⁹ Watson,¹⁰ Whitehead,¹¹ and Condie¹² all advocated this opinion, while M. Hervieux¹³ taught that this disease was nothing more than one of the important symptoms of tuberculosis in children under three years old. These opinions, though they have been promulgated by such excellent authorities, cannot be supported by bedside experience, and, instead of believing rickets to be but a form of scrofula or tuberculosis, I was, soon after commencing the study of the disease, led to conclude that as with syphilis there is an antagonism between them. In certain cases, rachitis may co-exist with either of them, but the association is a rare one, and the existence of rachitis excludes the presence of at least the higher manifestations of either of the other diatheses. Of the two, scrofula and rachitis are more frequently met with in the same person than tubercle and rickets.

¹ Treatise of the Rickets, London, 1668.

² Commentaries, etc., Edinburgh, 1776.

³ Aphorisms, London, 1742.

⁴ Diseases of Children, London, 1746.

⁵ Diseases of Children, New York, 1870.

⁶ Diseases of Children, Phila., 1868, p. 94.

⁷ Lancet, March 15, 1834.

⁸ Animal Chemistry, Syd. Soc. ed., 8vo., London, 1846, vol. ii. p. 284.

⁹ Diseases and Injuries of Bones, Syd. Soc. ed., 8vo., London, 1848, p. 28.

¹⁰ Prac. of Med., 4th ed., 8vo., London, 1857, vol. i. p. 206.

¹¹ Hereditary Diseases, 8vo., London, 1857.

¹² Diseases of Children, 8vo., Phila., 1868, p. 671.

¹³ Rilliet and Barthez, Dis. Enfants, 8vo., Paris, tome iii. p. 364.

In only a very few cases have we seen these associated. Indeed, it is very remarkable how these children recover from grave pulmonary complications, and we have frequently seen cases which seemed to present every condition favourable for the deposition of tubercles, but they nearly always recovered perfectly, or else died of some acute complication.¹ It must be concluded that tuberculosis cannot be considered as one of the causes of rickets. Rokitsky² and Trousseau³ say that the two diseases are mutually exclusive. There is certainly such a relation, but the law is not absolute. Willshire⁴ has recorded two cases of the disease which were associated with tubercular meningitis, and I have met with three such at the Philadelphia Hospital.

Ritter Von Rittershain⁵ asserts that chronic tuberculosis of the father predisposes a child to rickets. Jenner⁶ denies this, and our own observations would lead us to believe that he is entirely correct. It seems as if the health of the father had little influence in the production of this disease.⁷ Nor is it probable that tuberculosis in the mother predisposes her

¹ Great care should be exercised in the examination of rachitic children, or physical signs will be misinterpreted. In those cases which present considerable thoracic deformity, it is not uncommon to meet with high pitched, intense bronchial respiration, and if the auscultatory signs alone were relied upon, pneumonia or pneumonic phthisis would be diagnosed. In most cases, percussion will enable the physician to arrive at a correct conclusion, as the resonance remains unimpaired. In other cases, however, slight collapse of the lung produces some dullness, which makes it much more difficult to arrive at the truth, which can only be done by a careful comparison of the phenomena of percussion and auscultation, when it will be found that the intensity of the respiratory physical signs is out of proportion to the diminution of the resonance. Merei (*Disorders of Infantile Development and Rickets*, London, 1855, p. 198) recognized the condition to which attention is here directed.

² Pathological Anatomy, Phila., 1855, vol. i. p. 238, and vol. iii. p. 140.

³ Brit. and For. Medico-Chir. Rev., July, 1856, p. 74.

⁴ Lancet, Aug. 26, 1854.

⁵ Die Pathologie und Therapie der Rachitis, Berlin, 1863.

⁶ Med. Times and Gazette, 1860.

⁷ The part which the father plays in the transmission of disease seems, under all circumstances, to be very uncertain. Mr. Orton, in a paper on "The Physiology of Breeding" (quoted by Dr. Alexander Henry, *Edinburgh Medical Journal*, August, 1854, p. 113), has asserted "that diseases of the vital organs (and it may be presumed, therefore, diseases primarily involving the vital functions of nutrition and secretion), are transmitted oftener and in a more intense form and degree on the side of the mother than that of the father." This opinion is borne out by clinical experience in other diseases than rachitis. M. Cullerier (*Archives Générales de Médecine*, September, 1854, and *Edinburgh Medical Journal*, December, 1854), has come to the conclusion that syphilis is not transmissible from the father to his child, and Prof. Boeck (*American Journal of Syphilography and Dermatology*, Jan. 1870, p. 16) writes that the latter rarely inherits the disease except when the mother is affected. To this rule there are, we believe, occasional ex-

children to the affection. It is true that they will be born weak, but if properly cared for, and especially if fed from a full breast of milk, they will die of tuberculosis rather than of rachitis.

From these remarks it is apparent that we are not prepared to adopt the view that rickets is hereditary, though this opinion has been supported by some illustrious authorities. Herring¹ affirms that it is. Ritter von Rittershain's² observations seem to support the same opinion. Hennig³ believes that hereditary influence is strong. Stewart,⁴ Whitehead,⁵ Merei,⁶ Aitken,⁷ and Willshire,⁸ all believe in its hereditary transmission. Niemeyer⁹ says that it appears to be so in some families. Vogel¹⁰ says that "the possibility of its being inheritable is not to be ignored." Hillier¹¹ seems to favour the same opinion. Meigs and Pepper¹² believe that there is no evidence to show that it is ever hereditary. Holmes¹³ is of the same opinion. Before this Gregory¹⁴ had spoken more positively upon this point, saying that the constitution of the parents has little to do with the production of the disease; but the most positive authorities in regard to the matter are Routh,¹⁵ E. Smith,¹⁶ and Sir William Jenner,¹⁷ all of whom deny that it is ever transmitted from parent to child. It will be seen, however, that the affirmative side of this question is supported by some able authorities, and that in point of numbers the advocates of this doctrine preponderate. Notwithstanding this the writer is acquainted with no facts which support their position, and his own experience has led him to believe that Smith, Jenner, and Meigs and Pepper are correct. He has several times seen women who presented indubitable evidences of having suffered from rachitis in early life, and who had borne large families, none of whom presented any manifestations of the disorder. One of the most

ceptions, though the conclusion which we have been forced to adopt is that it is much nearer correct than is generally supposed. Our own experience has furnished us with no facts which support Ritter's conclusion, while the analogy of syphilis is opposed to his doctrine.

¹ Hillier, *Diseases of Children*, Phila., 1868, p. 94.

² *Ibid.*, p. 94.

³ *Lehrbuch krankheiten der Kinder*, § 420, quoted by Willshire.

⁴ *Diseases of Children*, 8vo., N. Y., 1841, p. 319.

⁵ *Hereditary Diseases*, 8vo., London, 1851, p. 27.

⁶ *Disorders of Infantile Development and Rickets*, London, 1855, p. 200.

⁷ *Reynolds' System of Medicine*, London, 1866, vol. i. p. 768.

⁸ *British and Foreign Medico-Chirurg. Review*, July, 1856.

⁹ *Practice of Medicine*, New York, 1869, vol. ii. p. 509.

¹⁰ *Diseases of Children*, New York, 1870, p. 532.

¹¹ *Diseases of Children*, Phila., 1868, p. 95.

¹² *Diseases of Children*, Phila., 1870, p. 634.

¹³ *Surgical Treatment of Diseases of Children*, Phila., 1869.

¹⁴ *Elements of Theory and Practice of Physic*, 8vo., Phila., 1829, vol. ii. p. 482.

¹⁵ *Infant Feeding*, 12 mo., London, 1863, p. 443.

¹⁶ *Wasting Diseases of Children*, Phila., 1870, p. 99.

¹⁷ *Med. Times and Gazette*, 1860, vol. i.

remarkable of these presented striking deformities, and her labors had all been difficult; but, being a prolific woman, she is the mother of seven living children, all of whom are healthy, and none of whom have ever presented any traces of the disease. In our article in the January number of this Journal, it was stated, that, if the subjects of rachitis live beyond a certain age and recovery commences, it is perfect, and the patient is as likely to live to old age as one who has been perfectly healthy in infancy. This being the case, there is no reason for supposing that the disease can be transmitted from mother to child. Rachitis is strictly and only an affection of infancy, never commencing after it, always ceasing before puberty, and never directly modifying the health after that time. Jenner¹ doubtless reached the truth when he attributed the disposition of the disease to affect most or all of the children of certain families, to the ill-health of the mother, which interferes with her duties in nursing, or to the greater tax upon the parents which prevents them from properly providing for a large number of children.

In the study of the etiology of rickets, one point demands a passing remark. Hitherto it has been spoken of as a diathetic disorder, but, as Dr. E. Smith² justly says, it is not diathetic as struma, tuberculosis, and syphilis are. In other words, the child is not born with a predisposition to rickets, except so far as it is influenced by age. The sooner this point is granted and the sooner this is acknowledged to be an acquired affection the better it will be for those affected by it.

The true causes of the disease are to be found in the surroundings of the child. Moss,³ who had much clearer ideas in regard to its etiology than many who lived before and after him, struck the keynote of the truth when he wrote, "By far the greatest number of cases which we see of it are chiefly or altogether brought on or increased by improper or bad nursing." Gregory⁴ reiterates the same opinion. During latter times poverty has been looked upon as the great predisposing cause of the disease. This is directly contrary to the testimony of the early writers upon the subject. Glisson⁵ said in his day that it "doth more frequently and vehemently invade the families of the wealthy than the cottages of poor men." Sir John Floyer,⁶ who wrote that "no distemper is more frequent in children than the rickets," also said that it was a disease of the upper classes; and Boerhaave⁷ evidently held the same opinion, for in his 1488th aphorism he says that it is generally more fatal to children whose parents are of a "weak

¹ Op. citat.

² Op. citat., p. 98.

³ Diseases of Children, England, 1744, pp. 266 and 367.

⁴ Elements of the Theory and Practice of Physic, 8vo., Phila., 1849., vol. ii. p. 482.

⁵ A Treatise of the Rickets, 12mo., London, 1668, p. 213.

⁶ History of Cold Bathing, 8vo., London, 1732, p. 76.

⁷ Op. citat., p. 440.

and loose contexture of body, are idle, delicate, and live in a plentiful manner." This testimony is in direct opposition to that borne by most recent authors, with the exception of Billroth,¹ who states that "in Germany, it is about equally frequent in all classes of society." Long before this Rosen von Rosenstein² of Sweden had asserted of the disease in that country that it affected the richer and very poorest people, and that it was rarely seen among those of middling fortune. It is exceedingly probable that this remark is equally applicable at the present time. Wealth unfortunately does not bring knowledge in its train and fit a woman to perform the duties of a mother, while it too often furnishes her the means to delegate the care of her child to others—uneducated and unprincipled nurses—through whom it suffers from neglect, while the mother herself, leading a life of ease and idleness, furnishes milk which is poor in quality or deficient in quantity. Among these the disease rarely continues long before medical advice is sought, and hence among them only the mildest forms of it are now to be met with. On the other hand, the poor mother, inured to excessive labour, imperfectly supplied with food, and occupying badly ventilated apartments in a close quarter, could hardly help having rachitic children. Those in the middle classes, however, who perform a moderate amount of manual labor, which acts as a healthy stimulus; who from necessity attend to their children themselves; who are supplied with a sufficient quantity of food of a good quality, and who occupy comfortable homes, we would expect to have fewer rickety children than either of the other classes, and such we believe is the case.

These remarks show that the efficient cause of rachitis is improper feeding. West has said³ that he has "never seen an infant while efficiently suckled by a healthy nurse or mother present any of the symptoms of rickets," and Lonsdale⁴ uses equally strong language, for he writes, "In all rickety children parents have had little or no milk for their supply," and "a child will not suffer from this disease if the mother is healthy and the milk secreted is plenty and of good quality during the first twelve months of life." Merei,⁵ on the other hand, thought that the character of the inspired air had more to do with the production of the disease. While we do not deny the importance of this, and while we believe that in some cases it is the efficient cause of the disease by its reactions on the digestive system, we do not think that it is so in the majority of instances. In by far the largest number of the cases which we have seen, the affection has had its origin in improper feeding. So firmly convinced am I of the potency of this cause that I should expect a child who was nursed by a healthy mother with a

¹ Surgical Pathology and Therapeutics, 8vo., New York, 1871, p. 452.

² The Diseases of Children, 8vo., London, 1776, p. 272.

³ Diseases of Children, Phila., 1868, p. 589.

⁴ Lancet, 1855, vol. ii.

⁵ Op. Citat., p. 158.

full breast of milk to escape the disease, no matter what might be the character of the rooms which it occupied. On the other hand, no matter how well ventilated these are, or how sumptuously they may be furnished, if the infant is supplied with food poor in quality or deficient in quantity, it will be very likely to become rachitic.

The relation of rickets to the character and amount of food furnished opens the whole subject of infant feeding, and its discussion involves the consideration of the influences which unfit the mother's milk for the nourishment of her child, for it is in this indirect way that maternal ill health produces this disorder. Those causes of the disease which act directly upon the child have been generally recognized. In 1860 Jenner drew attention to ill health of the mother as one of the indirect causes, and remarked,¹ that, if she was the subject of anemia or general weakness, her children would be rickety, though the father was in good health, and the hygienic surroundings most favourable. In 1862 Dr. W. Tilbury Fox² gave considerable prominence to these indirect causes, and especially to the influence of menstruation of the mother during lactation. The tables which accompany his paper appear to be conclusive, but my own experience will not corroborate that of Dr. Fox, and I cannot believe that menstruation during lactation is by any means a fertile cause of the affection. I have met with quite a number of perfectly healthy children whose mothers menstruated regularly from the birth of their children until the latter were weaned at the end of a year or fifteen months. That menstruation during lactation will sometimes impair the quality of the milk we do not deny, and that it may thus become an indirect cause of rachitis we confidently believe; but that it is so general and certain in its operation as Fox believes is very doubtful. Because a nursing woman menstruates regularly, it does not necessarily follow that her child will be ill, and that it should consequently be weaned. In our own experience the largest number and best marked examples of rachitis have occurred in children who have not been wet-nursed at all.

Other discharges seem to be just as potent agents in the production of rachitis as the menses. I have sometimes met with women whose children I could almost certainly predict would become rachitic if they were wet-nursed. The mothers of such are usually pale, rather fleshy but flabby women, who present the external evidences of good health, but they are often the subjects of a more or less profuse leucorrhœal discharge, which either comes on spontaneously some time after labour, or continues from that time, the lochia gradually merging into it. I do not believe, however, that the vaginal discharge is the cause of rickets, but, on the contrary, that it is an evidence of ill health, and shows that the woman may not be in a condition to nurse her child. It is not every woman, who is

¹ Loc. Citat.

² Trans. Obstet. Soc., London, vol. iv., 1863, p. 260.

the subject of leucorrhœa during lactation, who is incapacitated from wet-nursing.

In other cases the cause of rachitis has seemed to be pregnancy, which occurred during lactation. We have met with several examples of this kind. This does not seem strange, as the natural and well known physiological antagonism between the uterus and the mammæ, would render it almost certain that functional activity of one would be followed by functional quiescence of the other.

It seems to be demonstrated, therefore, that the most potent and frequent cause of the disease is the use of improper food; but it is to be remembered that this is not the sole cause. Long ago it was noticed that this affection might manifest itself after any acute disease which prostrated the child, and so Sydenham¹ and others described cases which followed acute diseases. This writer alluded particularly to malarial fevers. Indeed, it seems as if any child under one year old, who is depressed beyond a certain point, may become the subject of this disease, and Gee's² idea, that rickets is debility modified by age, does not seem so far wide of the truth. It is important to remember these facts, or the physician who looks upon improper food as the sole cause of the affection might commit the fatal error of weaning a child when its mother's milk was the most important and indeed the only curative agent required.

It has been stated that sex has some influence in the production of rachitis. M. Guerin³ has asserted that the disease affects females more frequently than it does males. Out of 346 cases treated by him, 198 were girls, and 148 were boys. Beylard⁴ admits the same proportion, and Brodhurst⁵ says that out of 500 cases of the disease which he has tabulated, 326 were females, and 174 were males. These are the only authors who specially mention sex as a predisposing cause, and though their statements appear to be very positive, they must be accepted with great allowance, for without exception they have failed to recognize that the disease may occur in early infancy. Besides this, their experience is directly opposed to that of other observers, for among Ritchie's⁶ cases the males exceeded the females. Out of 219 cases treated by him, 128 were boys, and 91 girls. According to the author's experience, sex has no influence in causing the disease. According to notes of 150 cases under his care, and in which the sex of the patient is mentioned, 78 were girls, and 72 boys.

Treatment.—It is important to remember that this is not a disease

¹ The Works of Sydenham. Syd. Soc. Ed., London, 1850, vol. ii. p. 100.

² St. Bartholomew's Hospital Reports, vol. iv. p. 78.

³ Memoir sur Rachitis, Paris.

⁴ Du Rachitis, &c., 4to., Paris, 1852.

⁵ The Deformities of the Human Body, 8vo., London, 1871, p. 24.

⁶ Medical Times and Gazette, July 7, 1871.

which has a certain definite course to run, but it is one which shows forcibly the good effects of well directed remedies. It is one which may be arrested at any stage in its progress, and one which, if properly treated, will nearly always end in recovery. As we have not hesitated to say that it is nearly always preventable, so we do not hesitate to assert that, if seen early, deformity should be the exception and not the rule.

It is not our purpose to discuss the necessity of furnishing the child with a plentiful supply of pure air and sunlight, nor do we intend to say anything in regard to the importance of supplying it with good food. The necessity for these is self-evident after what we have said.

Of the therapeutic agents for the cure of the disease, iron and cod-liver oil are the most important. The latter is almost a specific, and was long ago a common remedy for the disorder among the inhabitants of the shores of the Baltic.¹ The physician need not be deterred from giving it to these children on account of the diarrhoea from which they suffer: they will bear it when few other children will.

One of the best forms for the administration of this oil is an emulsion of it with the lacto-phosphate of lime, such as is made by Mr. Trinder of this city. More than a year ago the writer commenced the use of this preparation at the Philadelphia Hospital, and he has been entirely satisfied with the results. The preparation of Mr. Trinder is almost semi-solid, and each fluidounce contains half an ounce of Marvin's cod-liver oil and sixteen grains of the lacto-phosphate of lime.

Its advantages are that it can be given in cases where the pure oil will not be borne. Some children who were suffering from diarrhoea, and who rejected the ordinary oil, took this, retained it well, and improved rapidly. It could be given in the summer time, when the unmixed oil produced nausea and was rejected. What influence the lacto-phosphates have upon the course of the disease, I will not pretend to say, but I feel assured that patients improve more rapidly while taking this combination than they do when using the oil alone. M. Dusart² says that the lacto-phosphates do not precipitate in the stomach, but that they are absorbed and increase the amount of callus in cases of fracture.

I have repeatedly tried the other preparations of lime and the alkalis in accordance with the chemical theories of the disease, and have never found them to be of any use. A short time since, Dr. Sansom called attention to the good qualities of the sulpho-carbolate of lime in the treatment of the disease. This is a very soluble salt, but from the evidence of its usefulness furnished by its originator,³ I would not exchange it for the lacto-phosphate and cod-liver oil, though it is but just to say that I have

¹ London Lancet, 1851, vol. ii. p. 546.

² Michigan University Medical Journal, July, 1871, p. 316.

³ The Antiseptic System, etc., 8vo., London, 1871, p. 344.

never employed it. Dr. Ritchie¹ prescribed it in twenty-six cases, but only two of the children derived any benefit from it.

The most useful preparation of iron is probably the phosphate. If there has been long-continued diarrhoea, the solution of the per-nitrate is often preferable. The combination of cod-liver oil and iron is more efficient than either alone.

Quinia and other tonics are of course useful, and are to be administered in accordance with the usual indications.

The use of cold bathing is exceedingly important. The older writers on this disease speak of many cases cured by this agent alone.

The constipation of rachitic infants should not be treated by means of purgatives or enemata. It will often yield to cod-liver oil alone, but more certainly to the oil and iron combined. Where these have failed, I have sometimes, and with good effect, combined the iron and oil with manganese.

In the treatment of pseudo-paraplegia the nervous symptoms are to be ignored. These children improve rapidly under the ordinary remedies for rachitis. The same is true of the complications of the disease, laryngismus stridulus, and convulsions. Bromide of potassium is useful during the paroxysms and the intervals between them, to relieve the nervous irritability, but this remedy is not to be looked upon as in itself curative. He who ignores the local symptoms, and treats the systemic conditions upon which they depend, will prove the most successful in their relief.

The writer conceives that one of the most important questions in connection with the cure of this disease is the propriety of resorting to mechanical appliances to relieve the deformity of the lower limbs. About this there is considerable difference of opinion. As a rule, surgeons with one accord recommend the use of instruments, while physicians are either silent upon the subject or condemn them. Advocating the affirmative side of the question are Sir Astley Cooper,² Dupuytren,³ Little,⁴ Gross,⁵ Coote,⁶ Stanley,⁷ Billroth,⁸ Holmes,⁹ and Meigs and Pepper.¹⁰ Niemeyer,¹¹ Vogel,¹²

¹ Medical Times and Gazette, Jan. 7, 1871.

² Lancet, July 31, 1834.

³ Diseases and Injuries of the Bones. Syd. Soc. Ed., London, 1848.

⁴ On Deformities, &c., London, 1853, p. 215.

⁵ Syst. of Surgery, 4th Ed., Phila., 1866, vol. i. p. 826.

⁶ On Joint Diseases, London, 1867, p. 273.

⁷ Diseases of the Bones, London, 1849.

⁸ Surgical Pathology—Trans. by Hackley, New York, 1871, p. 453.

⁹ Surgical Treatment of Children's Diseases, Phila., 1869, p. 347.

¹⁰ Diseases of Children, Phila., 1870, p. 642.

¹¹ Prac. of Med., New York, 1869, vol. ii. p. 514.

¹² Diseases of Children, New York, 1870, p. 534.

and Spence¹ speak guardedly in relation to the matter, while Merei,² Jenner,³ Hillier,⁴ and Smith⁵ oppose the use of splints for the cure of the deformity.

It is thus seen that the largest number of physicians are advocates of the use of instruments. Among these, Mr. Holmes Coote speaks very positively. He writes:⁶ "The use of splints and apparatus is a subject of paramount importance, the object being to prevent alteration in the shape of the bones. If the child pass through this period of infantile suffering without great deformity, the recovery is complete. If the bones bend, the deformity is permanent." Mr. Coote has here fallen into a serious error. At the close of his paper in the January number of this Journal the writer called attention to the fact that these deformities sometimes diminish with surprising rapidity as the cure progresses. Any one who has seen many cases of rachitic distortion of the thorax must have been struck with the fact that, though extreme, this may almost entirely disappear. It has been argued that, because bow-legs are produced by the weight of the child's body, they will not spontaneously improve. This is by no means true, a fact which Lawrence announced long ago.⁷ He saw children whose legs were much bent lose all deformity in a very short time, and he thought therefore that mechanical appliances to relieve these distortions were mischievous.

After a careful search of the literature of the subject, and the observation of many cases of the disease, the writer is convinced that there are no clinical facts to prove that the bending of the bones of the leg can be improved by mechanical appliances without inflicting other and more serious injury. From a study of the natural course of the disease, he can most positively confirm the statement made by Lawrence in 1829, though he is well aware that an adverse opinion is held by many competent surgeons, and he is strongly inclined to believe that an improvement which has followed the application of an instrument has occurred in the natural course of the disease, and has been erroneously credited to the appliance used. The iron braces which are often put on children in this city cannot be too strongly condemned. While they may give support to the softened bone, they must effect this by injuring and making pressure upon some other part of the osseous system, and this, in a vast majority of instances, is the pelvis, a part which is only too liable to be deformed when even the utmost care is taken.

Spence says⁸ that "mechanical appliances should not be had recourse to

¹ Lectures on Surgery, Edinburgh, 1869, vol. ii. p. 280.

² Diseases of Infantile Development and Rickets, London, 1855, p. 218.

³ Med. Times and Gazette, May 12, 1860.

⁴ Diseases of Children, Phila., 1868, p. 116.

⁵ Wasting Diseases of Children, Phila., 1870, p. 102.

⁶ On Joint Diseases, London, 1867, p. 273.

⁷ Lancet, June 5, 1829.

⁸ Lectures on Surgery, Edinburgh, 1869, p. 983.

without great caution, and if used, should be constructed with the nicest care." He further states that they "may be necessary." We fully endorse the first assertion, but that splints "may be necessary" is a question which we conceive is still open for discussion. If it is answered in the affirmative, we do not hesitate to say with Boyer¹ that they are more useful to correct vicious positions than the deformities arising from the disease.

One of the advantages usually claimed for these supports is that they allow the child to take exercise while the constitutional treatment is progressing. Now, this is precisely what we do not want. Because the effects of the lesions of the bones are so palpable and to such an extent overshadow the other phenomena of the disease, rickets has been too often looked upon as a disorder of the osseous system alone. We have already shown that it is a constitutional affection, and that other tissues and especially the muscles are involved in the rachitic process. These are peculiarly weak, and children affected with the disease are indisposed to walk, a disposition which the physician is to foster rather than combat.

Passive exercise, by being carried or wheeled in the open air, is useful and necessary, but active movements of the child upon its feet should in most cases be prevented until the bones have acquired sufficient firmness to allow the patient to stand or walk without their bending. In some instances the improvement in the osseous system does not progress as rapidly as that of the muscles, when these children desire to exercise their newly acquired powers almost constantly. In these cases, as Jenner² suggests, light splints may advantageously be applied to the lower extremities and allowed to project beyond the feet, so as to prevent them moving about until the bones have acquired sufficient firmness to allow this to be done with safety. In other instances, as suggested by Boyer, they may be used in order to destroy a faulty habit of standing or lying. In both cases the splints are to be light, nicely adapted to the part, and are to be used *to prevent and not to cure* deformity.

This is the great secret in the mechanical treatment of rachitis. No external remedy will ever reach the seat of the disease, and, whatsoever may be its form, and however far it may have progressed, it can, with rare exceptions, be cured by the proper administration of cod-liver oil, lacto-phosphates of lime, iron, and quinia.

Some writers upon this subject have recommended moulding the limbs for the relief of the deformities, and Dupuytren has given it especial prominence³ in the treatment of the deformities of the thorax which he describes. Since that time numerous examples of apparent benefit from it have been recorded in medical periodicals. The more carefully these are sifted the less they

¹ Diseases of the Bones, Phila., 1805, p. 196.

² Medical Times and Gazette, 1860, vol. i. p. 467.

³ Diseases and Injuries of the Bones.

appear to support the views of the originator of the method. The physician has to separate the effects which naturally follow the process of cure from those of his manipulation, so carefully that it is very difficult to decide how much benefit is derived from the latter. It does not seem to have occurred to any that there is a physical impediment which prevents this manipulation from being beneficial. Jenner¹ has shown that the thoracic deformity of this disease is due to atmospheric pressure. The indication, therefore, is to permanently restore the relation normally existing between the capacity of the respiratory passages and the resistance of the chest wall. This cannot be done by merely re-expanding the collapsed sides of the thorax, but they must be retained there by counter-pressure of air within the lung. This can only be effected by the re-expansion of the collapsed portions of the latter.

The prevention of deformity is the most important part of the treatment of a case of well-developed rachitis, but that of the chest and extremities does not interest us so much as that of the pelvis, on account of the fearful influence of the latter upon parturition. One important point to be remembered here is, that distortion of the arms, chest, and legs bears no relation to that of the pelvis, and that the latter may be greatly deformed while these remain almost natural. The physician who believes that the pelvis becomes misshapen only from the weight of the superimposed body, will find himself grievously mistaken. The writer has several times met with lesions of the bones of this cavity, in which no bending or twisting could be detected during life, and in which the shape of the long bones of the upper and lower extremities remained nearly natural. The anterior projection of the lumbar vertebra may be due to sitting, in a child who has never walked, or the sides of the pelvis may be compressed so as to produce permanent deformity by a faulty position in lying.

For these reasons a child should be kept in a recumbent position and on its back until the pelvic bones become sufficiently formed to bear the weight of the superimposed body, and it should always lie on a firm and perfectly smooth mattress.

The craniotabes may require some special measures. These children tolerate pressure upon the occiput very poorly. Elsässer, therefore, says that the pillow of the child should be constructed with a large central aperture, which would remove the pressure from the occipital bone. The child usually obtains much relief from frequent bathing of the head with cold water.

The especial condition which is associated with the craniotabes, and demands treatment, is the cerebral irritation. To prevent this, everything which gives rise to congestion of the brain is to be avoided. Jacobi² says

¹ Medical Times and Gazette, 1860. ² Am. Journal of Obstetrics, Nov. 1870.

that in cases in which there is passive congestion, it may be relieved by ergot. There is no better remedy in the irritability of these infants with a disposition to convulsions than morphia. It may be given fearlessly in proportion to the age of the patient. The writer is well aware that many physicians object to opium being given to infants, in which he cannot accord, and he has always prescribed this remedy whenever the same circumstances would have indicated it in the adult, and has never seen cause to regret it. Moreover, infants will often bear a dose larger in proportion to their age than adults.

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ART. II.—*A Review of the Recent Trial of Mrs. Elizabeth G. Wharton on the Charge of Poisoning General W. S. Ketchum.* By JOHN J. REESE, M.D., Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania.

THIS celebrated trial¹ has excited so much interest throughout the country, both on account of the high social position of the accused, and also from the nature of the evidence offered by the State, that we are persuaded a review of the scientific testimony—medical and chemical—cannot fail to prove interesting to our readers. The theory of the prosecution was, that Mrs. Wharton was in debt to Gen. Ketchum, and had invited him to her house in Baltimore for the purpose of poisoning him; and that she actually accomplished her design by means of tartar emetic.

For a better understanding of this, we will advert briefly to the facts of the case; first, however, calling attention to the very strong prejudice which seems to have prevailed in the public mind in the city of Baltimore against the accused, and which naturally induced her counsel to avail themselves of the merciful provision of the law, which permits the trial to be transferred to another county of the State. Accordingly, the venue was changed from Baltimore to Anne Arundel County; and the trial took place in Annapolis, on December 4, 1871. It terminated on January 24, 1872, after lasting for a period of fifty-two days; the jury bringing in a verdict of “*not guilty*.”

General Ketchum, the deceased, was an old army officer, aged fifty-eight years, an intimate friend of Mrs. Wharton, and of her late husband, Colonel Wharton. He was alleged to be in good health, and of active

¹ It may be proper to state that the materials for this Review have been taken partly from the writer's personal recollections, and partly from the Report of the Trial published by the Baltimore Gazette, in pamphlet form.

habits. On the 24th of June, 1871, a very hot, sultry day, he had undergone considerable bodily exercise in the city of Washington, by walking through the streets in the pursuit of his business matters. So much was he engaged in his occupation, that he neglected eating his dinner, although he partook plentifully of ice-water. He started for Baltimore later in the day, and arrived at Mrs. Wharton's house between six and seven o'clock in the evening. He partook of no food until supper-time, near nine o'clock. At this meal, he ate very heartily of various articles, among which was a plate of raspberries, remarking (according to one of the witnesses) that "he must make up for two meals." After supper, he sat up talking until about eleven o'clock, when he retired to bed, apparently in his usual health. During the night, he was heard to go down stairs once or twice, into the yard. The next morning, June 25th, he remarked that he had not been very well in the night; but he went out to visit a friend, after breakfast, and he partook of all his meals with the family, on that day; and although complaining of not feeling very well, he appeared brighter and more cheerful after tea, chatting and smoking with the family until about eleven P.M. Before going to bed, he drank a glass of lemonade, along with his friend Mrs. Chubb. His glass contained some brandy, which he put into it himself. On that night, he was again sick, as on the preceding night, having some slight vomiting and purging. The following morning (26th), he complained of a sick stomach and giddiness, and remained in his room during the day, although he partook of each of his meals. In the afternoon, at the strong solicitations of Mrs. Wharton and Mrs. Chubb, he consented to see a physician, and Dr. Williams was sent for. The doctor visited him about four o'clock, and found him sitting up, and vomiting into a slop-jar held between his knees. He ordered him to bed; and, regarding his case as an attack of cholera morbus, he directed him to take a mixture of lime-water and creasote every two hours. No mention is made of diarrhœa at this time. This simple treatment seems to have speedily relieved him, since, on visiting him on the following morning (27th), the physician found him quietly sleeping; and on being awakened, "he said he was much better, and expressed his determination to return to Washington that morning." He discharged his physician at that time, the latter regarding his patient as well.

Throughout this day, however, according to the testimony of several witnesses, he was more or less drowsy, requiring to be aroused, and seeming as if under the partial influence of some narcotic. Indeed, he remarked to the coloured woman who waited upon him, that "he had taken some of his own medicine, and that he knew that was sufficient; to let him alone, and he would sleep it off." This fact, taken in conjunction with the circumstance of a vial which had contained laudanum being found in his bed on that afternoon, leads strongly to the suspicion that the General had taken some laudanum on his own responsibility, for the purpose of relieving his sick-

ness. He is also described by the servant, as seeming to be very weak, so as scarcely to be able to walk.

No evidence of either vomiting or purging was discovered on Tuesday. Late in the evening of that day, Gen. K. was noticed lying on a lounge, "sleeping heavily, and breathing heavily." Mrs. Wharton having expressed her anxiety about her guest to Mr. Hutton, this gentleman went to Dr. Williams, and mentioned his condition to him. The doctor, however, did not judge it necessary to visit the patient at the time, but remarked that "he had been weakened by vomiting, and sleeping would do him no harm." On returning, Mr. Hutton found the General "turned upon his side, and breathing easily;" and so he was left for the night.

On the morning of the 28th, he was found still lying on the lounge, in an almost insensible condition. Mrs. Wharton at once dispatched a servant to Dr. Williams, at eight o'clock (the doctor says it was ten), with a request for him to come at once, as the General was much worse. He came soon after ten o'clock, and describes the patient as being "in a semi-comatose state, very difficult to arouse, and giving inarticulate answers." On being touched, "a slight convulsive tremor passed over him from head to foot." "His head and face were much congested, of a purplish tinge." On being raised up and supported towards the bed, "his arms and legs were found to be stiff and rigid." "He said nothing about his sufferings," and on being aroused, gave "only a muttered reply." His pupils were "not contracted, though insensible to light;" the respiration was about natural; the skin not preternaturally moist. The treatment consisted in the application of ice to his head, for the first hour; then he took forty drops of tincture of gelsemium in a little water, which appeared somewhat to diminish the congestion of his face. This last dose was directed to be repeated in the course of two hours. While the ice was upon his head, the patient made attempts to get out of bed; he had also some convulsions of a peculiar character, the tendency of which was "to throw the body from the back to the left side."

The doctor evidently considered him very ill, as he "remained with him two hours," and so informed Mrs. Wharton, and spoke with her of the propriety of telegraphing to his near relations. Still, the only treatment that was employed from ten to one o'clock was the application of ice to the head, at first, and the subsequent exhibition of two doses of tincture of gelsemium.

After taking the second dose of the latter, five minutes before one o'clock, the General began to be very uneasy, "first slapping the shoulder (of witness), as she sat by his bedside; then grasping with both hands the back of his neck, then the front of his throat, his stomach and his chest; uttering incoherent cries of oh! oh! don't! don't!" (*Vide* testimony of Mrs. Hutton.) The convulsions increased in intensity, giving to the body the true character of *opisthotonos*. The countenance and the movements of the

hands, the tearing at the neck, breast and abdomen indicated to one of the witnesses (Mr. Snowden) that "he was suffering excessive pain;" so much so, that he inquired of Mrs. Wharton "if the General had had any brain affection previously." These movements were, however, most probably of an automatic character.

These alarming symptoms at once led to the summoning of Dr. Williams, who reached the patient about half past one o'clock. He expressed surprise when informed that the General grew worse after taking the second dose of the yellow jessamine, and remarked that he "should have expected a similar result to that of the first dose." He very soon administered chloroform by inhalation, with a view of controlling the spasms, and also for the purpose of drawing off some urine by the catheter, that he might test it for albumen, as the idea of uræmic poisoning very naturally occurred to his mind. The test, however, gave him only negative results, and he abandoned that idea. Afterwards, thirty grains of hydrate of chloral were given in a little milk, but the convulsions, at the time, were so violent that "it was with great difficulty the spoon could be gotten into his mouth; he bit upon the spoon, so that his middle front tooth was loosened." No benefit appears to have been derived from either the chloroform, or chloral; and the General died about three o'clock, P.M., in a convulsion.

The *autopsy* was made on the following morning by Dr. Williams, assisted by Professors Miles and Chew. The brain and contents of the abdomen only were examined at this time. The brain is described by Dr. Williams, as "showing nothing that would explain the cause of death." "I discovered," says he, "numerous minute red points of a punctiform character, which were rather the effect of some other cause than that which resulted in death." "I cannot say whether they were ante-mortem or post-mortem." Prof. Chew states that "they found some evidences of congestion in the cerebral lobes; the congestion was punctiform, occurring in spots." Prof. Miles says that, although there was no congestion of the dura mater, on removing this membrane "there was the appearance of venous congestion in the other membranes." "There was no serous effusion under the membranes." "Throughout the substance of the brain were found those dark points of blood, which indicate passive congestion." The medulla oblongata presented nothing abnormal.

As regards the viscera of the abdomen, the alimentary canal is described by Prof. Chew as showing "some evidences of congestion, but not very well marked, or unmistakable;" they were not considered as "very significant." Prof. Miles found the intestines "congested in patches," and "containing a whitish, pulpy substance along their track." The liver, spleen, and kidneys were in a normal condition. The stomach, after being properly secured by ligatures, was removed, and taken to Professor Aikin, of the University of Maryland, for chemical analysis. When this organ was

subsequently opened, there was "some slight congestion about the lower part of it," according to Dr. Chew; and according to Dr. Aikin's Report, "nothing of a very marked character," pointing to inflammation.

Prof. Aikin, in due time, reported, as the result of his analysis of the contents of the stomach, that "he had satisfied himself" of the existence of tartar emetic in that organ, and in the quantity of "at least twenty grains." His *method* of arriving at this conclusion we shall discuss hereafter. At present, we refer merely to the fact of his analysis and his alleged results as forming the probable ground of the opinion of Dr. Williams, and of Professors Chew, Miles, Donaldson, Howard, Johnston and Smith, that "the death was not due to natural causes." It is true that some of these gentlemen testified to a hypothetical case put to them by the State; but one of the very strong elements of this hypothetical case was "the supposed finding of twenty grains of tartar emetic in the stomach of the deceased." Hence, we may reasonably infer that the opinion of these medical witnesses was materially influenced by the *assumed* fact of the existence of the poison in the stomach of General Ketchum, at the time of his death. If this one element had been left out of consideration, and their minds had been entirely free from the bias which such an impression must necessarily have imparted, we cannot but believe, from the tenor of the testimony given by these same witnesses, that they would not have entertained the opinion that the death had resulted "from non-natural causes."

Let us see whether the facts of the case, as brought out by the evidence, do not sustain us in this belief. Certainly, the attending physician, Dr. Williams, did not suspect that his patient was labouring under the effects of any poison, at his first visit, on the afternoon of June 26th, for he tells us distinctly that he regarded the case simply as one of "cholera morbus;" and states, moreover, that Gen. K. told him on that occasion "that he had had cholera morbus on Saturday and Sunday nights" previous. He further states, in his cross-examination, that "if tartar emetic had been present" at this time, "the creasote prescribed by him would have had no effect." This was, of course, a correct conclusion, and goes to establish the proof that, at this time at least, there was no suspicion of poison in the mind of the attending physician.

It would appear, however, from the evidence, that both the patient and the physician were mistaken as to the true condition of the former on Tuesday morning (27th), since, as already noticed, he was in reality suffering from a sort of narcotism—being in a more or less drowsy condition throughout the entire day.

The next occasion of Dr. Williams being called was on the 28th, about ten o'clock A.M. He had been again summoned by Mrs. Wharton to see Gen. K., who was worse on that morning. His condition, on that occasion, has already been described. There was not the least sign of irritation of the stomach or bowels; neither nausea, vomiting, nor purging; no

characteristic relaxation of tartar emetic, but on the contrary, a decided rigidity of the arms and legs, and clenching of the jaws. Most assuredly, in this stage of the disease, poison does not seem to have been suspected, since no means were taken either to evacuate it, or to administer any antidote. Indeed, Dr. W. appears (quite naturally) to have been at a loss to account for the condition of the patient. At one time, his "impression was that he had congestion of the brain, threatening apoplexy;" then, "dismissing this idea, he feared paralysis;" then again, when informed of the discovery of a laudanum vial which fell from the General's bed on the preceding evening, entertaining the impression of "opium poisoning, though not to a dangerous extent;" but subsequently rejecting this idea, on account of "the natural size of the pupils and their insensibility to light," the absence of "slow and laborious breathing," and the general rigidity of the muscles. Finally, he "feared uræmic poisoning," and drew off some urine by the catheter, and tested it for albumen, but "found it perfectly healthy."

The only treatment all this time directed was "the application of ice bags to the back of the neck" for one hour; then (at eleven A.M.) the administration of "forty drops of tincture of gelsemium in two teaspoonfuls of water." As the result of this dose, the patient's appearance is stated "to have improved; his color was better, and the appearance of the eye notably better." This dose was directed to be repeated in two hours. During the interval, the patient appears to have shown "some little twitching of the fingers" (*Vide* testimony of Mr. Snowden); and "he looked very much like a dying man," between twelve and half-past twelve. (*Vide* evidence of Mr. Loney.) And Prof. Smith testified that he "considered that the party described was dying at eleven A.M."

The second dose was administered by Mrs. Wharton herself, in the presence of Mrs. Hutton and Mr. Snowden, and with the aid of the latter, a few minutes before one o'clock. These two persons testify that Mrs. Wharton seemed unduly anxious about the arrival of the time for giving the medicine, frequently inquiring about the hour, and actually preparing the draught before the designated time. They assert also that the liquid administered by her was greater in quantity, and darker in colour than the former dose. Now, we cannot suppose it possible that any suspicion of poison had at this time entered into *their* minds, since they offered no opposition to the administration of the draught, and gave no alarm.

Again, on the third visit of Dr. Williams to Gen. K.—about half past one o'clock the same day, he entertained no more suspicion of poisoning than on the two former occasions, since he gave no emetic, used no stomach-pump, nor exhibited any antidote. If any doubt arose in his mind, it was possibly that the gelsemium had disagreed with him. At all events, *he adopted no means whatever to counteract any suspected poison*, but simply employed the ordinary means for the relief of convul-

sions—chloroform and chloral. Indeed, he tells us in his testimony, that the suspicion did not enter his mind, until after he had tested the urine, and about an hour before the patient's death.

But just at this crisis, an event occurred which was calculated to make an impression on the doctor's perplexed mind. A suspicious-looking tumbler of milk-punch had lately been discovered in the dining-room, by some of the numerous visitors at the house. This punch had been prepared some hours previous, for Mr. Van Ness (who was lying sick in the parlor of the same house), by his own wife and sister; and he had partaken, at the time, of a portion of it. When the wife, some time afterwards, returned to the dining-room for the balance of the punch, on pouring it out of the tumbler, she noticed a white sediment at the bottom, which imparted to her tongue a disagreeable, metallic taste. This tumbler was carefully preserved, and was at once carried off by one of the sisters to several places, in order to get it tested, but without success. It was shown to Dr. Williams soon after his arrival at the house—about two o'clock.

In the excitement of the household, this alleged discovery is made to play an important part in the drama of Gen. Ketchum's death. It would seem that the wavering and conflicting theories that had perplexed the mind of the physician, as to the nature of his patient's disease, now assumed a definite form, in the shape of tartar-emetic, or some other poison. He communicated his suspicions, that same evening, to Gen. Brice, brother-in-law of Gen. Ketchum; and he made the post-mortem examination on the following morning, removing the stomach for chemical analysis. The other viscera of the abdomen, together with the brain, were examined at the same time. Two weeks subsequently, the body was exhumed, and the thorax was examined. The spinal cord was not examined at all.

Let us now advert to the medical testimony for the prosecution. The physicians here summoned were gentlemen of ability and reputation, Professors Chew, Miles, Donaldson, Howard, Johnston, and N. R. Smith—all colleagues of Prof. Aikin, in the University of Maryland—together with Dr. Williams and a few other non-professors. Dr. Williams appears to have been specially retained by the State, and he evinced much zeal in working up the case. He tells us (as already noticed) that the suspicion of poison did not enter his mind until about an hour before his patient's death; that after the discovery of the suspicious tumbler of milk-punch in the dining-room "his doubt was very much changed into a conviction that he had been poisoned." It should be here observed that the tumbler of punch had no connection whatever with Gen. Ketchum; it had been prepared for another sick person, in an entirely different part of the house, by the wife and sister of that person, and there appears not the slightest evidence to connect it in any manner with either Mrs. Wharton or with the deceased.

Still, Dr. Williams "suspected that he had died from poison anterior to the post-mortem examination;" and "by the evidence of the post-mortem,

his previous opinion was strengthened." "He knew of no instance in which yellow jessamine had produced convulsions" (though such cases have been reported). "If he had known that Gen. Ketchum was under the influence of tartar emetic, he would have given him the yellow jessamine." "He does not admit that tartar emetic is a depressant," nor "would he say that yellow jessamine is a depressant." He also testified that "he had never seen a case of tartar-emetic poisoning;" and "that tartar emetic was more soluble in tea than in water." He also testified that "he had failed to discover in the lungs, brain, heart, or liver any evidences of death from other than natural causes."

Prof. Chew, of the University of Maryland, testified that he had been a practising physician thirteen years; "that from the narrative of symptoms as given by Dr. Williams, and from his own observations of the changes in the organs, he should say the case was a very obscure one, and he could not assign a cause for death." Still, although this gentleman admitted that, judging either from the symptoms alone, or the post-mortem alone, he could not ascribe the death to a non-natural cause, nevertheless it was his opinion, judging from both combined, "that he did not die from natural causes." He further stated "that his opinion to this effect was formed from the fact that at the post-mortem they found in no organ such changes as would have produced death." We would simply ask here, if the above is a logical inference?

Prof. Miles, of the University of Maryland, next testified that "he had been a practising physician twenty years; that he had no experience in cases of poisoning with tartar emetic;" and "that he had never made a post-mortem examination in a case of death from tartar emetic;" that "he could not say, from the symptoms alone, what was the cause of death; the negative evidence of the post-mortem examination would not alone be sufficient for him to base an opinion upon as to the cause of death." And yet, in apparent contradiction to the above, he testified further, that, "from the narration of Gen. K.'s symptoms, and from what he saw at the post-mortem examination, his opinion was that he did not die from natural causes." We would again ask the question, Is the above a logical conclusion?

Prof. Donaldson, of the University of Maryland, has been in practice twenty years; he testified as an expert, to the hypothetical case put by the State, that "he would be very much puzzled to make a clear diagnosis from the description given; there are points of resemblance to several well-known diseases, but at the same time, there is an absence in each of certain prominent symptoms." He alluded to cholera morbus, uræmia, apoplexy, congestion of the brain, tetanus, and cerebro-spinal meningitis, as the diseases which, in some of their features, might be suggested by the symptoms presented by Gen. K.'s case, and by the hypothetical case. He thought, however, "that the absence of the characteristic post-mortem lesions pre-

cluded the idea of death from cerebro-spinal meningitis." He, therefore, "felt justified in saying that, to the best of his knowledge and belief, he did not die of natural causes." He "has never seen a case of acute poisoning from tartar emetic;" but he thought that the symptoms described "closely corresponded to what the authors state." [Among the symptoms referred to by the witness, no mention is made of the most prominent ones of tartar emetic poisoning, viz.: vomiting, purging, extreme relaxation, insensibility of the skin, and increase of the urinary secretion—all of which were absent in Gen. K.'s case.] He admitted that "he would not have given an opinion as to the cause of death only on the symptoms;" and "he should have declined to have given an opinion from the post-mortem observations alone." He further testified that, although "there are diseases in which there are no perceptible post-mortem lesions," yet "it is from the symptoms and the post-mortem observations that I am enabled to arrive at an opinion." [It will be remembered that the post-mortem observations were mostly of a negative character.] He further testified that "a semi-comatose condition is not mentioned by the authors as one of the symptoms of tartar-emetic poisoning; and that insensibility, but not coma, is mentioned."

Prof. N. R. Smith, of the University of Maryland, has been practising medicine for fifty-two years; testified as an expert, on the hypothetical statement, that, according to the best of his judgment, "the party therein described died from non-natural causes." He was "familiar with the sporadic form of cerebro-spinal meningitis, especially in children." "The yellow jessamine, chloral, and chloroform were not such agents as I should have prescribed; they were depressing agents, and inappropriate; but I do not think they had any effect in determining the result." Again, "I consider that the party described was dying at eleven A. M. on Wednesday."

Prof. W. T. Howard, of the University of Maryland, has been in practice since 1844; testified as an expert, on the hypothetical statement, that "he did not think the party therein described died of cerebro-spinal meningitis," "finding no adequate lesion after death to account for the symptoms," and also judging from "the clinical history of the case recorded in that hypothetical statement."

Prof. Christopher Johnston, of the University of Maryland, has practised medicine about twenty-five years; testified as an expert, that "in his opinion the party therein described did not die from cerebro-spinal meningitis;" and, "as that picture presents no symptoms with which I am acquainted, I should infer that he died from non-natural causes."

The argument of these several witnesses seems to be that, because all the symptoms of the hypothetical case did not, in their opinion, correspond with certain diseases, and also because the generally recognized lesions of these diseases were not observed after death, *therefore* the death must have resulted from a non-natural cause, *i. e.* poison. This is virtually to admit

that poisons (and the question here is only with the *metallic* or *irritant* poisons) must prove fatal, without ever leaving any lesion behind, discoverable by post-mortem examination !

Dr. Geo. W. Benson, a practitioner of Baltimore for twenty years; testified as an expert, to the hypothetical case, that "he did not think the party therein described died from cerebro-spinal meningitis," but "from non-natural causes."

Dr. Girard E. Morgan, a physician of Baltimore, has been practising for twenty-one years; testified as an expert, to the hypothetical case, "that he had seen but one case of cerebro-spinal meningitis;" "that he could hardly give a direct answer to the inquiry;" but "he had never seen such an assemblage of symptoms from a natural cause." "He had heard of other cases of cerebro-spinal meningitis occurring in the city about the same time."

Dr. Chas. H. Ohr, a practitioner of thirty-eight years, of Cumberland, Md.; testified to the hypothetical case, as an expert. "He had had some experience with cerebro-spinal meningitis, but he did not think that there were any symptoms of this disease in the hypothetical case described." In his opinion, the party there described "did not die from a natural cause." This witness subsequently corrected himself, saying, "that he did not wish to be understood as meaning that none of the symptoms of cerebro-spinal meningitis were present in the hypothetical case; but only none which were distinctly characteristic;" he did not think that there is any pathognomonic symptom of cerebro-spinal meningitis, as he understood the disease.

Dr. Abram P. Arnold, a physician of Baltimore, in practice twenty-two years; testified as an expert, to the hypothetical case, that he was somewhat familiar with cerebro-spinal meningitis; that "the symptoms stated in the hypothetical case did not correspond with what he knew to be the symptoms of cerebro-spinal meningitis;" that "he was not prepared to give a direct answer to the interrogatory appended;" and "that in his opinion, the set of symptoms which preceded the death of the party described was of a very suspicious character."

It should be noticed that none of the medical witnesses for the State testified that tartar emetic was the cause of death. Dr. Donaldson said that "he thought the symptoms resembled what the authors stated to be those of tartar-emetic poisoning." All the others merely spoke of the death as being produced by "non-natural causes."

The medical testimony of the defence will next claim attention.

Dr. John J. Reese, of Philadelphia, was the first medical expert called. He was also examined as a chemist. He testified that he had been practising medicine over twenty-five years; "that there are no symptoms which are exclusive to tartar-emetic poisoning;" that "if a poison could be recognized by its symptoms alone, it would not, of course, be necessary

to make a chemical analysis;" that "there are many diseases whose symptoms closely resemble those of irritant poisons, as cholera morbus, especially in its initial symptoms, gastro-enteritis, peritonitis, and some others." He had seen one case of tartar-emetic poisoning which, however, was not fatal; here "there were great muscular relaxation and pallor of the face." "He would not pronounce this a case of tartar emetic poisoning from the symptoms alone;" "from the testimony of Drs. Williams, Chew, and Miles, he should not form the opinion that Gen. K. died of poisoning, judging from the symptoms and from the details of the post-mortem combined; and for the reason, that such symptoms and such post-mortem signs might be logically accounted for from natural causes." He further stated that "among the natural causes or diseases to which the death might be logically attributed, was one disease indicated by Prof. Donaldson—cerebro-spinal meningitis; that many of the symptoms in Gen. K.'s case strongly resembled those of the above-mentioned disorder, especially the pain in the back of the head and neck, the pain extending round the abdomen, the lividity of the face, the suppression of the urine, the extreme sensitiveness of the skin, the rigid contraction of the muscles of the neck, the bending back of the body in the arched form (*opisthotonos*), the partial delirium, and the condition of the eye; also the accompaniment of nausea, especially in the earlier stages." He further testified "that, in exceptional cases, cerebro-spinal meningitis (especially the fulminant form) may prove fatal, without leaving behind any discoverable lesions. This happens also in other diseases of a convulsive character, as hydrophobia, epilepsy, and some others."

The witness further stated, that the failure to examine the spinal cord and its membranes left it uncertain how far this organ might have been affected by disease; "that in all medico-legal investigations the rule was that the examination should be thorough and exhaustive, omitting no portion of the body." He also said "that he did not wish to be understood as positively asserting that Gen. K. died of cerebro-spinal meningitis." "He thought the cause of his death obscure; he meant to say that there was a probability that he died of this disease, and that he did not die from poison." Also, "that he did not consider tetanus as answering to the symptoms of the deceased as closely as did cerebro-spinal meningitis." Dr. Reese cited, as authorities sustaining his position in reference to the occasional absence of all pathological lesions in certain forms of cerebro-spinal meningitis, Aitken, Reynolds, Tanner, Niemeyer, Radcliffe, and Flint.

Dr. Edward Warren, a physician of Baltimore, practising for nearly twenty-two years, next testified, as an expert; that "he could see nothing in the symptoms described in Gen. K.'s case, or in the revelations of the post-mortem examination, or in them both combined, inconsistent with the operation of natural causes in the production of death."

This witness gave a very graphic and lucid description of the symptoms

and progress of cerebro-spinal meningitis, as noticed by himself, and as detailed by the standard authorities (the same authorities as cited by the preceding witness). He considered the identity of the symptoms in Gen. Ketchum's case with those of cerebro-spinal meningitis as being "complete." This was shown "by the suddenness of their development, their violence, and the rapidity of their course;" by "the condition of semi-consciousness, the increased sensitiveness of the surface, so that the patient shivered when touched; the rigidity of the muscles of the neck, back, and inferior extremities; the pupils neither contracted nor dilated, but insensitive to light; suppression and retention of urine; rapidity and compressibility of pulse; lividity of countenance; trismus; opisthotonos; disposition to turn on one side involuntarily; occasional jactitation and restlessness; incoherent articulations, and a speedy and violent death." The absence of pathological lesions was stated by the witness to be of occasional occurrence in the "fulminant" form of the disease; and, to support this assertion, he quoted several recognized authorities.

The witness further testified that, in his opinion, Gen. K. could not have been poisoned with tartar emetic on Saturday night, or Sunday night, on account of the length of time (several hours) that elapsed between his eating and drinking for the last time, on those occasions, and the manifestations of his slight cholera-morbus symptoms; again, that he could not have been poisoned on Monday, because, when visited by Dr. Williams on that day, he was sitting up "with the slop-jar between his knees"—a degree of muscular power incompatible with the extreme prostration uniformly attendant on antimonial poisoning; also, that he was relieved by creasote and lime-water, which are not antidotal, either chemically or physiologically, to tartar emetic; again, that he could not have been poisoned by tartar emetic on Tuesday, because his symptoms on that day were altogether incompatible with all the recognized symptoms of antimonial poisoning; and finally, he could not have been so poisoned on Wednesday, both because of the absence of the well-marked tartar-emetic symptoms, and still more because of the remarkable identity of his symptoms with those of cerebro-spinal meningitis. The witness expressed it as "his opinion, that no other theory will explain the history of his sickness and death; nothing else will adequately account for all the facts of the case." He likewise stated, that the negative character of the post-mortem signs negated the theory of antimonial poisoning. He considered "the most important and invariable symptoms of this to be nausea, vomiting and purging, sedation of the heart's action, as indicated by a feeble, frequent and compressible pulse, disturbance of the respiratory function, together with the most profound muscular prostration, cramp, or convulsive movement in certain groups of muscles, a cold, clammy skin, copious secretion and discharge of urine, and a constant disposition to syncope, with venous congestions."

Dr. John Morris, a practising physician of Baltimore for nearly twenty-six years, next testified, as an expert, to the hypothetical case, "that it was a difficult and delicate question; that he could not assign a cause of death, if simply asked that naked question; that he saw nothing to exclude death from a natural cause, but, at the same time, he could not venture to say what that natural cause was." The witness described two cases of cerebro-spinal meningitis, that were seen by himself and Dr. Warren, and stated that the disease was quite prevalent that season in Baltimore. "He had never made a post-mortem examination in a case of that disease." Among the symptoms he described, he stated his belief that "the cries" of the patient did not necessarily indicate pain; and his opinion was that "the movements are more automatic than otherwise."

Prof. Harvey L. Byrd, of Washington University, Baltimore, in practice for thirty years; testified as an expert, to the hypothetical statement, that, as the result of his reflections thereon, his opinion was "that Gen. K. had died from natural causes, *i. e.* from disease, though he was embarrassed to decide what particular disease." "In some features, it resembled cerebro-spinal meningitis." "The suppression of urine constitutes an almost unfailing symptom, in certain conditions of this disease; but it is not so in tartar emetic poisoning." The witness regarded the symptoms, on the whole, as more closely fitting cerebro-spinal meningitis than any other disease.

Dr. Peter Goolrick, a physician of Baltimore of twelve years' standing; "had heard the testimony of Drs. Williams and Chew, and read that of Dr. Miles. From the symptoms and post-mortem revelations, he would say that Gen. K. might have died from natural causes, and not from tartar emetic." "Several diseases might produce the symptoms described." "There are several diseases which leave no lesions, and it would be unsafe to say that they were caused by tartar-emetic poisoning." "The tetanic spasms in tartar-emetic poisoning are a divergence from the usual symptoms."

Dr. John R. McClurg, a practitioner of medicine since 1846, now residing in West Chester, Pa.; testified to the hypothetical case, that "he had no hesitation in saying that death was the result of natural causes; it resembles, undoubtedly, cerebro-spinal meningitis more particularly than any other disease." He had treated "certainly fifty cases" of this disease "in private and military practice." He considered it "impossible for a poisonous dose of tartar emetic to have remained in the stomach from half past eight A.M. until half past twelve P.M. (Wednesday), without producing the characteristic symptoms of tartar-emetic poisoning." The witness "had seen probably twenty post-mortems of cases of cerebro-spinal meningitis; the lesions are very various;" "at times, we have been able to find no marks of inflammation, but only a congested condition of the bloodvessels and membranes of the brain, but without effusion." "The

brain-substance may be poisoned (in cerebro-spinal meningitis), and no inflammatory lesions be left." "The suppression of urine is one of the characteristic symptoms of the disease." "If antimony had been found in his stomach, liver, and kidneys, I could not say whether he died from antimonial poisoning, cerebro-spinal meningitis, or apoplexy from congestion." The witness further testified, that he was acquainted with the effects of gelsemium, and that he frequently used it in his practice; but that "he did not think that the (apparent) change for the better, after eleven o'clock on Wednesday, was at all attributable to it." He further "did not think that, if tartar emetic had been given to him at one o'clock (on Wednesday), it would have had any effect, for he was too far gone."

Dr. Wm. H. Baltzell, a practitioner of Baltimore of thirty years' standing; testified to the hypothetical statement, that the death "was the result of natural causes." "From his experience with a great many cases of cerebro-spinal meningitis, he would say that it most resembles that disease." The witness related a well-marked case of this disorder occurring in Baltimore in May last, to which he called Dr. Warren in consultation, all the symptoms of which remarkably resembled those of Gen. Ketchum. [This case was also alluded to by Dr. Warren, in his testimony.] He also stated that other cases of a similar character had occurred in Baltimore, about the same time. "He had seen cases of tartar-emetic poisoning; a fatal case in a child from an accidental dose, the quantity unknown; the muscular system was perfectly relaxed; the skin was moist and insensitve; no impression was made by handling; the circulation was very feeble; the action upon the kidneys was powerful, by increasing the secretion. This child died from excessive vomiting and purging; but from appearances, the case might have been mistaken for either Asiatic cholera, or cholera infantum."

Dr. Josiah Simpson, Surgeon U. S. Army, commissioned in 1837; was examined on the hypothetical case; and from it saw "no indication of death from unnatural causes;" his "conclusion was that the death was from natural causes;" he saw "nothing in the symptoms, or the post-mortem examination, to justify him in any other conclusion." "He had witnessed the effects of an overdose of tartar emetic in others, and in himself; it completely prostrated him; he could not raise his head to vomit," and "the complete prostration resulting lasted for more than twenty-four hours."

Dr. Abram Claude, a physician of Annapolis, in practice for thirty years; "heard the testimony of Drs. Williams, Chew, and Miles; would, from Gen. K.'s symptoms and the post-mortem revelations, ascribe his death rather to a natural, than a non-natural cause;" he "was acquainted, to some extent, with cerebro-spinal meningitis, having seen a good many cases in 1862, and also some since." Among the most characteristic symptoms, he enumerated "rigidity of the muscles of the neck and back, throwing back

of the head, hyperæsthesia of the skin, and insensibility of the pupils." He was familiar with the effects of tartar emetic, having used it in practice for years. "Had never seen a fatal result from its use. He had often tasted it, and it had never produced any soreness about his mouth or tongue." "A man may die from natural causes, and the post-mortem fail to reveal them; this is true particularly of diseases affecting the nervous apparatus." The witness further stated, that he considered the clutching movements of the hands, in Gen. Ketchum's case, "did not necessarily indicate pain;" he did not consider him to have been in good health at the time of his arrival at Mrs. Wharton's house, "as he was then taking medicine, by the advice of his physician in Washington." He moreover "thought, from the symptoms described at ten o'clock A.M. on Wednesday, that it mattered very little what was done for Gen. K. after that time; he considered him then to be labouring under a mortal disease, which steadily progressed up to the time of his death." "The last dose did not have any important effect, if any at all, in hastening the termination of the case." He "supposed that any poison might cause convulsions." "He would not undertake to say positively and decidedly what was his disease;" neither had he said positively that Gen. K. had "died from cerebro-spinal meningitis."

We next turn our attention to the chemical testimony. This, of course, constituted the main feature of the case. The finding of a poison (except in very minute quantities) in the stomach, or tissues of a body, is always strong presumptive evidence that death had resulted from the poison. If, in addition to this discovery of poison, the symptoms before death were characteristic of that particular poison, then the conclusion might be considered almost positive that the poison was the cause of death. The reason why we at all qualify the remark is, that *it is possible* for poison to be introduced into the stomach (but not into the tissues) after death, in a case of disease, where the preceding symptoms strongly resembled those characteristic of the poison itself. But such a case must necessarily be of very rare occurrence.

Dr. William E. Aikin, Professor of Chemistry in the University of Maryland, for thirty-five years; testified to receiving from Drs. Chew and Miles, the glass jar containing the stomach of Gen. Ketchum, on the 30th of June, 1871. From the information given to him by the medical gentlemen, he was led to infer the possible existence of "strychnia," or of "arsenic" in that stomach. He tested for the former of these by the process of Stas, which gave him a negative result. He next proceeded to examine for the inorganic poisons, arsenic and antimony, using the material already employed in the analysis for strychnia. This residue he divided into two portions, A and B. The portion A was treated with strong hydrochloric acid and chlorate of potassa, by heat; afterwards a stream of washed sulphuretted hydrogen gas was transmitted through it;

the precipitate thus obtained was of a "dark brownish colour." Finding this precipitate to be insoluble in aqua ammoniæ, he "was satisfied that it could not be arsenical." He then experimented with portion B, being led "to suspect that antimony was present," from the reactions of portion A. He testified that "there could not have been present (in portion A) any metal which forms a dark, or black sulphide, or the precipitate would have been black." But he admitted, on the cross-examination, that "lead would sometimes give a red precipitate, which might be mistaken for the antimonial red"

The witness further testified that "the presence of antimony is established by obtaining two or three results, which he called characteristic; these results would be: the orange-red sulphide of antimony; that this orange-red is soluble in strong, boiling muriatic acid; that acid solution dropped into water, gives a white precipitate; this white antimonial precipitate is made orange-red by sulphide of ammonium." Any substance which would give all the above results "must contain some antimonial;" and, as "he got all these results from the portion which he examined, he could not entertain the shadow of a doubt as to the presence of antimony."

In testing portion B for antimony, he "added an excess of tartaric acid, filtered it, and examined the filtrate with sulphuretted hydrogen." He deemed "there was no necessity for destroying the organic matter." The precipitate thus obtained was "reddish-brown, or brownish-red." When this was "separated and dried, it dissolved in muriatic acid; this solution, when dropped into water, gave a white precipitate; that white precipitate became orange-red, when treated with sulphide of ammonium; and it was soluble in tartaric acid. This completed all that was necessary to satisfy me of the presence of antimony; I know nothing that would have produced these results except some preparation of antimony."

The witness further testified that, in his opinion, "the quantity (of tartar emetic) present in the stomach could not have been less than twenty grains or more." His method of arriving at this conclusion is certainly novel, if not unique, in chemical determinations. It is to be remembered that the Professor passed sulphuretted hydrogen through the solution obtained from the stomach, strongly acidified by tartaric acid, *but still containing all the organic matter*. Now, it is well known by every chemist that, under such circumstances, a precipitate, more or less copious, will be thrown down, of a "reddish-brown" or yellowish-brown colour, which may be composed *exclusively* of sulphur and organic matter. If there should be any metal present, then the precipitate would contain the metallic sulphide, mixed with a variable quantity of sulphur and organic matter. Now, Prof. Aikin assumed that his precipitate, thus obtained, consisted exclusively of sulphide of antimony, *when, for aught he knew, it might have contained only sulphur and organic matter*. But, stranger

still, he did not even think it necessary to employ the ordinary method of *weighing* his precipitate; he was content to compare it, by the eye, with another precipitate "obtained from the sediment of the tumbler given him by Dr. Chew." The novel method of getting at the quantity of this second precipitate should not be passed by unnoticed. "I weighed out," says he, "one grain of the white sediment from the tumbler" (supposed by him to be tartar emetic); "the antimony obtained was in the shape of sulphide of antimony; and that, dried and weighed, was four-tenths of a grain; from which I inferred that the tartar emetic present in that grain of sediment must have been eight-tenths of a grain. If that was true of one grain, eight-tenths of the sediment must have been tartar emetic." But what was the actual amount of the sediment? Surely, it was easy enough to weigh it; this, however, was not deemed necessary by the analyst. He adopted a simpler method—he *guessed at it!* He tells us: "In my judgment, fifteen grains were, speaking within bounds, present; and the tartar emetic I put at ten grains, desiring to underestimate rather than overestimate." He then goes on to compare, *by his eye*, the bulk of the precipitate obtained from the one grain of the sediment, with the bulk of the precipitate obtained from the solution of the stomach. This latter precipitate, we have just shown was made up largely, if not exclusively, of sulphur and organic matter; and such a mass, when dried, might have a very considerable bulk, and yet possess but very little weight. Still, it is by this very extraordinary method of comparison, that Prof. Aikin undertakes to assert that he had discovered "twenty grains of tartar emetic in the stomach" of Gen. Ketchum!

Prof. Aikin admitted that he "did not use all the processes by which antimonial poisoning may be detected;" he "used means by which he arrived at what he had a right to consider a perfect certainty;" these means "he had learned when a student, and they were then recognized as reliable." "He had been teaching these methods to his classes so many years, that he could not remember when he began to teach them." He admitted that he had no *results* of his analysis to produce in court; "he presumed he might have gotten metallic antimony;" *but he did not get it.* He "satisfied his own mind," and that was enough! But alas, for this hasty conclusion! the chemical testimony for the defence most completely demonstrated that the colour-test (the orange-red precipitate), with all its subsequent reactions, save in one single point, *might be exactly imitated without the presence of an atom of antimony*, as we shall presently see.

Again, the witness was not thoroughly clear as to the purity of his reagents; thus, "he had not tested his sulphuric acid, within at least the space of six months." He spoke of "detecting impurities in strong mineral acids by sulphide of ammonium,"—an unheard-of method, and one chemically impossible. He affirmed that "it was impossible to extract tartar emetic, as such, from the stomach of a dead person; nobody had

ever done it; let it once enter into solution, and it is beyond the reach of mere mechanical separation." Why, surely he overlooks the beautiful and simple process of *dialysis*, by which crystalline bodies (including, of course, tartar emetic) can easily be separated from the colloids.

Prof. Aikin testified that he had not been informed what medicines had been administered to Gen. Ketchum; also, that he did not know what were the contents of the stomach at the time of his death. He "was unable to say what would have been the result of his analysis as to colours, if Gen. K. had taken chloral and yellow jessamine."

Moreover, "he had kept no laboratory notes," but only some very scanty memoranda of his analysis made early in July, which he subsequently destroyed; but he "trusted to his memory" in making out his Report, about the middle of October.

In analyzing the contents of the tumbler, Prof. Aikin adopted the same process that he had employed in the examination of the stomach, using, however, *only one grain* of the material. He "did not test all portions of the sediment, to see that they were the same," nor did he test "the organic matter of the sediment." In neither of his analyses did he deem it of any importance to isolate the *metal*, which he said he could have done by Marsh's process; but which, extraordinary as it may seem, he neglected to do. We may remark, that, besides Marsh's process, chemists are acquainted with four other methods of reducing the metal antimony, viz.: Reinsch's process, the galvanic process, the precipitation on tinfoil, and the blowpipe.

It will be remembered that, after the cross-examination of Prof. Aikin, and the failure of the prosecution to sustain the allegation of poisoning by the chemical analysis, on the fifteenth day of the trial, the State produced a new analyst—Prof. Tonry, of the Maryland Institute, Baltimore, who had been employed, *without the knowledge of the defence*, to make a new chemical examination of the liver and other viscera of Gen. Ketchum's body, which was the second time disinterred for this purpose, by Drs. Williams, Miles, and Chew, by order of the State. Mr. Tonry stated that his analysis was only partially completed; and the court granted him several days to finish it. This action was energetically opposed by the counsel for the defence, as unfair and unprecedented; but their opposition was overruled by the court.

This witness testified that he was told by Drs. Williams and Chew, "to examine only for antimony." He described his method of analysis with the most elaborate detail and extra caution, although he admitted that his drying-tube (chloride of calcium) had been used before, and therefore might have contained impurities. He exhibited, as the result of his experiment with Marsh's apparatus, several minute dark spots, on a porcelain lid, which he took to be either arsenic or antimony. There were, in all, thirteen of these minute spots, each about the size of a small pin's

head. Prof. Tonry stated that "he supposed he could have gotten more of them." In order to determine whether they consisted of arsenic or antimony, he applied "to one or two of them, a drop of sulphide of ammonium; the greater part dissolved readily." This he believed was antimony. "The more difficult solubility of the remaining speck, or part of the spot, would denote arsenic." He failed to obtain any evidence of *metallic* antimony by fusing the precipitate from sulphuretted hydrogen, when mixed with cyanide of potassium and carbonate of soda, on charcoal; although "he obtained the metal" by a comparative test, by treating "a very small quantity of tartar emetic with the same flux." But "he was led to believe that the quantity of material that he had first operated upon was too small for the production of the metal."

He next proceeded to estimate the quantity of the assumed antimony, as follows: A portion of the original acid solution was treated with chlorate of potassa, "to see if he could get rid of the colour;" that, he precipitated with sulphuretted hydrogen; washed the precipitate; dried, and dissolved it in strong muriatic acid; diluted with water, and again treated it with sulphuretted hydrogen. "The precipitate thus obtained was not of the bright colour of that from tartar emetic, but it seemed to be modified by some colouring principle, which he could not get rid of." Still, this "did not cause any doubt in his mind that it was antimony."

He then stated that he weighed the dried precipitate, and "the weight was $\frac{2.5}{100}$ ths of a milligramme; this would be equivalent to four milligrammes of the sulphide for the whole solution, or $\frac{6}{10}$ ths of a grain."¹ From this, he estimated that "there was a total amount of antimony, in the liver, of half a grain." Let us examine this result. First, it was a grave error to assume that the dried precipitate consisted exclusively of sulphide of antimony. It most certainly contained a mixture of organic matter and sulphur—the latter in very considerable quantity, since he exposed his precipitate, from Wednesday to Friday, to the air. There might have been here the merest trace of a metal, or there might have been none at all. Prof. Tonry's idea that "his precipitate could not contain sulphur, because he washed his sulphuretted hydrogen," is remarkable for its novelty, as well as for its impossibility. He testified that "in the solution, there would be an excess of sulphur, but *not* in the precipitate"!

Secondly, his mode of weighing was not accurate. He first dried his precipitate in the beaker "on a water-bath." This would not deprive it completely of adhering moisture. Again, he only weighed it once: it

¹ Mr. Tonry is somewhat confused in his figures: four milligrammes (0.004 gm.) are about equal to $\frac{6}{100}$ ths of a grain, and not $\frac{6}{10}$ ths of a grain, as stated in the text. In his cross-examination, he gave 2.5 milligrammes as the weight of his precipitate; this would give about $\frac{6}{10}$ ths of a grain as the weight of the precipitate from the whole solution.

should have been weighed repeatedly, until it ceased to lose weight by drying. Due care was not exercised in transferring the beaker to the balance, to protect it from moisture, or dirt from the hand. All the above elements of error very seriously affect chemical results, when the question is about fractions of a milligramme; the very errors may account for all the alleged results, in such delicate manipulations.

Mr. Tonry made another examination of portions of the kidneys, spleen, and pancreas, during the interval allowed him by the court, employing the same method as before. By Marsh's process, he obtained five very minute spots of a dark colour, which, he said, "were not very volatile by heat, and readily soluble in sulphide of ammonium." These spots "he had no doubt were either antimony, or arsenic," *but he did not prove them*. The witness also testified that he had obtained "a ring on the delivery-tube of Marsh's apparatus, by putting a spirit-lamp under it;" but for some unknown cause, he did not produce this ring in court, so that we are left in much doubt concerning it. He further stated, that he treated a portion of the original acid solution with sulphuretted hydrogen, "which gave a black precipitate; that, when this was treated with strong muriatic acid, it was dissolved;" then, on passing sulphuretted hydrogen through this acid solution, he "obtained the unmistakable colour of antimony, more so at first than afterwards." We have already alluded to the fallacy of this test, under the circumstances; and we must insist that the experimenter was, consequently, not authorized to conclude that antimony was present.

Besides Professors Aikin and Tonry, the State also called Dr. J. H. Thompson, Professor of Physiology of Georgetown College, and Dr. Benj. F. Craig, Analytical Chemist, of Washington. The former testified to having seen a fatal case of tartar-emetic poisoning at St. Bartholomew's Hospital, London, in 1847, in which the symptoms were "vomiting, purging, a burning sensation of the stomach, giddiness and excessive prostration." The person recovered from that dose, but some hours after, took another, after which "there was but little vomiting and purging, pulse rapid and very feeble, skin cold and clammy, face of a dusky hue, and death in violent tetanic spasms." The witness thought that, from the hypothetical case presented, the party "did not die from natural causes," although "some of the symptoms would correspond with a pumber of diseases."

Dr. Craig testified simply to the written report of Prof. Aikin, "that his tests were the usual tests to discover the presence of antimony, and were in his opinion sufficient. The obtaining of the red colour with sulphuretted hydrogen, under the circumstances, and the obtaining of a white precipitate by the action of water on the acid solution of that red precipitate, are sufficient to make the presence of antimony certain. All other substances known to science, except antimony, would have given a different colour."

This witness evidently was not acquainted with the action of sulphuretted hydrogen on acid solutions of gelsemium and other organic sub-

stances, and the subsequent behaviour of the precipitate with muriatic acid and water.

The chemical experts summoned by the defence were Professor R. S. McCulloch, of Washington-Lee University, Lexington, Va.; Dr. F. A. Genth, Analytical Chemist, of Philadelphia; Dr. John J. Reese, Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania; and Prof. H. C. White, of St. John's College, Annapolis.

The testimony of these witnesses was, in the main, very similar. They all agreed that in every case of metallic poisoning, where the issues of life and death are involved, it is absolutely essential to obtain the *metal* in sufficient quantity, and bring it into court, so as to allow the experts for the defence to operate upon it, and prove the poison. Another point insisted upon by them was the absolute necessity of excluding all extraneous matters—such as sulphur and organic matter—in the precipitate, which is to be weighed for the purpose of estimating the actual amount of the discovered poison. Now, in the present case, as has been shown, this most obvious point was totally neglected, and the attempt was made to cover it up, by flatly denying the necessity of the precaution!

A very remarkable and interesting portion of the testimony of these witnesses was that which had reference to the similarity in appearance, between the precipitated sulphide of antimony and the precipitate obtained by passing sulphuretted hydrogen through just such a mixture as was found in the stomach of Gen. Ketchum, after treating it with hydrochloric acid. The colour is, in both cases, orange-red. We have already adverted to the fact, known to all chemists, that when sulphuretted hydrogen is passed for some time through an acid solution containing organic matter, a precipitate, more or less copious, will be obtained, of a yellowish-brown colour; it consists merely of precipitated sulphur and organic matter, and it might be mistaken for an impure precipitate of either arsenic or antimony. It remained, however, for Professor McCulloch to develop the interesting and important fact, that, if the organic substance in the solution acted upon by the sulphuretted hydrogen be the tincture of yellow jessamine and chloral (the latter is not essential), and sufficient time be allowed—say several hours—the colour of the precipitate is of a decided *orange-red*. This effect may be speedily brought about by dropping sulphide of ammonium into a slightly acidulated solution of the jessamine-tincture and chloral. The colour of the precipitate here very soon becomes a rich orange-red, which would defy any chemist to distinguish from the (supposed) characteristic orange-red sulphide of antimony.

Of course, as is well understood by the chemist, the only point of identity is the *colour* of the precipitates. It is true that the colour of the organic precipitate soon undergoes a change, becoming gradually darker, and finally almost black. But the fact of real importance and interest to the toxicologist is, that there are other matters beside antimony which will give the

“characteristic orange-red” precipitate; and that to rely upon this colour-test alone, in the search for antimony, might be attended with the most serious and fatal mistake. In the present case, for example, there can be no doubt that the contents of Gen. Ketchum’s stomach comprised the gelsemium, chloral, and milk which he took just before his death. Now, inasmuch as Dr. Aikin’s mode of analysis did not get rid of this organic matter, and as we have just shown what would be its reaction with sulphuretted hydrogen, we ask what proof can be adduced of the presence of any antimony, judged by this particular test?

But, it will be alleged that, in testing for antimony, the orange-red precipitate must be subjected to farther proofs, viz. : its solution in boiling hydrochloric acid; the giving a copious white precipitate when this solution is thrown into water; the solubility of this white precipitate in tartaric acid; and the change of colour in this same precipitate into orange-red when touched with sulphide of ammonium. Now, how far will the organic precipitate from gelsemium, chloral, &c., follow out the above particulars? We reply, that the singular analogy holds good in every particular except one—the solubility of the white precipitate (or cloud, according to Prof. Aikin) in tartaric acid. Thus, the orange-red organic precipitate is, at least partially, soluble in boiling hydrochloric acid; this solution when thrown into water gives a white cloud, which ultimately becomes a precipitate; and this precipitate, if still moist with the acid solution, becomes reddish when touched by sulphide of ammonium. We reaffirm here, what we stated in our evidence, that this discovery of Prof. McCulloch has opened a new and important field of chemical investigation, in relation to this particular line of testing for mineral poisons. Surely, if *three* of the links of this chain of “characteristic” proofs of the presence of antimony be broken, and the only other one left is possibly faulty, the chemist can repose very little confidence in its support. He must look to other less defective tests; in fact, in medico-legal cases, he should be content with nothing short of the production of the metal (in metallic poisons), and that in sufficient quantity to be subjected to *all* the known reactions.

In relation to the dark coloured “spots” exhibited by Prof. Tonry, we have seen that there was a failure, in the first place, to identify them as either antimonial, or arsenical deposits. Their extreme minuteness could not have permitted him to manipulate with any certainty as to the result. By an actual comparison of these spots with some trial spots made by Drs. Genth and Reese, it was estimated that each of Mr. Tonry’s spots represented only the one-twelve-thousandth to the one-twenty-four-thousandth of a grain of tartar emetic (supposing the spot to be antimony). The whole thirteen stains would therefore only represent about the one-thousandth to the one-two-thousandth of a grain—a quantity so very minute (even if it be admitted to be antimonial, or arsenical) that it might readily be accounted for, by its accidental introduction through the reagents, or

otherwise. Dr. Taylor and other high authorities distinctly state that it is unsafe to rely upon results which are obtained by operating on quantities less than the 150th to the 200th of a grain. And yet Mr. Tonry says that "he partially dissolved one or perhaps two of these minute spots in sulphide of ammonium," and came to the conclusion that it was composed partly of antimony and partly of arsenic! "On one or two other of the spots he tried nitric acid, to see if he would get the white oxide of antimony," but "he got no satisfactory results."

Dr. Genth and Profs. Reese and White testified that they deemed it impossible to manipulate upon such minute spots, with any degree of certainty. The former witness asserted that he had operated upon eight or ten of the antimonial spots made by himself (each of which was at least double the size of Mr. Tonry's) with sulphide of ammonium, but he could not obtain a reliable result. In the celebrated Laffarge case, the 130th of a grain of arsenic only was found, and that after an enormous quantity of chemicals had been used up. Dr. Taylor alludes to the chemical evidence in this case as "of a most unsatisfactory kind," and such as "should have been rejected by the court." "No man," says he, "with any respect for his character, or for the common sense of a jury, would base chemical evidence on the thousandth, or less than the thousandth part of a grain of poison, in a case of life and death."

There is another inaccuracy in Prof. Tonry's experiments. He stated that "he added potash to dissolve the (supposed) sulphide; he presumed it would form antimoniate of potash; he then added tartaric acid with the object of obtaining tartar emetic." This is manifestly a chemical impossibility, since, as every chemist knows, the reaction of potassa with the sulphide of antimony results in a partial double decomposition, giving rise to the oxide of antimony and the sulphide of potassium; and further, on the addition of an acid, a precipitate of the oxy-sulphide of antimony would be thrown down. Since this did *not* occur with Mr. Tonry, the inference seems unavoidable, that he could not have been operating with an antimonial compound.

Finally, in regard to Mr. Tonry's delicate *weighings*. He testified that "his balance was guaranteed to weigh the twentieth of a milligramme" (about the $\frac{1}{1300}$ th of a grain); and that, on it "he could weigh the three-thousandth part of a gramme" (about the $\frac{1}{200}$ th of a grain). Prof. White testified that he had been Mr. Tonry's predecessor in the Maryland Institute; that he had fitted up the laboratory there; that "he did not think much reliance could be placed on delicate weighings made there, because the building is shaky, being built on made ground." Further, that whilst the weighings there might be sufficiently accurate for commercial purposes, he himself "would not like to weigh there less than the $\frac{1}{50}$ th to $\frac{1}{25}$ th of a grain."

The careful analysis of all the scientific testimony leads us to the fol-

lowing conclusions: Dr. Williams, the physician of Gen. Ketchum, who certainly had the best opportunity for observing, had no suspicion of his patient being poisoned, throughout his whole sickness, until about an hour before his death. The idea then seems to have entered his mind in consequence of his being shown a tumbler containing a suspicious looking sediment, that had been found in a distant part of the house. The doctor's suspicions, very naturally, were "strengthened into convictions," when he learned, in a few days, of the alleged discovery by Prof. Aikin, of tartar emetic, both in the stomach of the deceased and in the sediment of the tumbler. It would seem, perhaps, only natural that Dr. Aikin's colleagues in the University—Profs. Chew, Miles, Donaldson, Howard, Smith, and Johnston—all gentlemen of high character and standing in the profession, should be influenced by this fact, in the testimony which they gave at the trial, as to whether the death of Gen. Ketchum was to be attributed to a natural or a non-natural cause.

When, however, the chemical analysis came to be sifted, it was found to be altogether inconclusive; there was no proof of the presence of anti-mony in the body of the deceased; the tests employed were shown to be fallacious; and in fact, the whole chemical evidence completely broke down. Notwithstanding this disproof, so powerful had been the mental impression of the presence of poison, as the main element connected with Gen. Ketchum's death, that the witnesses could hardly disabuse themselves of it. All we desire to insist upon here is the very strong presumption that the medical testimony of the State was materially influenced by the *assumption* of the actual discovery of tartar emetic in the body of Gen. Ketchum, by the chemical analysis.

As regards the medical testimony for the defence, the position assumed, and maintained with considerable ability, was that the death of Gen. K. could be accounted for most logically, and most consistently with sound physiological principles, on the theory of *disease*, and not on the supposition of tartar-emetic poisoning. To support their position, they appealed both to the symptoms before death, and to the post-mortem signs. They argued that while the former were in some particulars not absolutely inconsistent with the symptoms of tartar-emetic poisoning (inasmuch as there are no symptoms exclusively characteristic of this poison), they were far more in accordance with certain diseases affecting the great nervous centres, and especially with cerebro-spinal meningitis. Some of these witnesses asserted the absolute identity between the symptoms of the deceased and those of cerebro-spinal meningitis—especially the fulminant form. Others, again, without being quite so positive, testified to the strong probability of this disease having been the cause of death. Several of the Baltimore physicians deposed that cerebro-spinal meningitis was very prevalent in that city, at the time of Gen. Ketchum's sickness, though this was denied by others. It was admitted also by all the medical experts for the defence,

as well as by some of those for the State, that diseases do sometimes prove fatal, without leaving any discoverable lesions. Numerous standard authorities were cited to support this fact, in relation to the fulminant form of cerebro-spinal meningitis.

Scores of professional men, of the very highest reputation in the country, have coincided with the opinions above expressed; among whom we will only mention here Dr. Fordyce Barker, of New York, who has written a letter, quoted in the *N. Y. Herald*, strongly endorsing this view of Gen. Ketchum's case. We will here briefly quote from an authority of acknowledged reputation, in relation to the value of *symptoms* exclusively, as affording an indication of poison: Christison says, "It is now laid down by every esteemed author in medical jurisprudence that the symptoms, however exquisitely developed, can never justify an opinion in favour of more than high probability." And again, when treating of arsenic, "The present doctrine of toxicologists and medical jurists seems universally to be, that symptoms alone can never supply decisive proof of its administration." "All these symptoms may be caused by natural disease;" and "consequently, every sound medical jurist will join in condemning unreservedly the practice which prevailed last century, of deciding questions of poisoning in such circumstances, from symptoms alone."

The only remark that we would offer here in connection with the chemical testimony, has reference to the remarkable analogy between the results of the action of sulphuretted hydrogen on antimony, and on certain organic bodies, as explained above. We deem it highly probable that other organic substances besides gelsemium and chloral, will be found, which will render this analogy even still more complete. Certain it is, that the researches so far have settled the question of the inadmissibility of what has, heretofore, been regarded as very strong proof of the presence of antimony, in toxicological investigations; and they still further strengthen the position taken by the defence, of the absolute necessity of "producing the metal" in all criminal cases of metallic poisoning.

Before taking leave of this subject, we cannot forbear adverting to one or two incidental points. The first is, the impropriety of conducting a post-mortem examination, where there is a suspicion of death by poison, and where the reputation and even the life of a fellow-being is involved, without the presence and oversight of the legally constituted authority—the coroner. It must be evident to every observer, that the whole examination, in the present case, was in the hands of those who were not entirely devoid of prejudice. The first autopsy is made by Drs. Williams, Miles, and Chew, within twenty hours after death—the strong suspicion of poison influencing the minds of these gentlemen. Two weeks later, the body is exhumed and is again examined, exclusively by these same persons. There is no representative or friend of the accused party invited to be present. Surely, this was not in accordance with justice or propriety. Were it not that the

professional and social character of the parties concerned places them above suspicion, there might certainly be very grave reason for taking exception to such *ex parte* proceedings; for there might be just cause for doubt, in relation to the absolute identity of the material operated upon. But still more glaring was the departure from propriety, when the body was the *second time* disinterred, and that too during the actual progress of the trial. The State, finding its case completely failing by the breaking down of the evidence of Prof. Aikin, secretly dispatched Drs. Williams, Chew, and Miles to Washington, with instructions to again exhume Gen. Ketchum's body, and remove the liver and other viscera, for a second chemical analysis. We say this thing was done *secretly*, for no friend or representative of the defence was apprised of it. Possibly, one or more of the judges knew it. Certainly, none of the counsel for the defence was aware of it, until Dr. Williams, one morning, gave the unexpected detail to the court, and informed them that the new chemist, to whom the analysis of the viscera had been committed, was now ready to give a partial exhibition of his results!

Now, it seems to us that this procedure on the part of the State was unfair to the accused, to her counsel, and to the cause of justice. We deem it contrary to all precedents in criminal jurisprudence, to take such an unfair advantage of the accused. Why was not her counsel informed of this intention of the prosecution, so that at least one of the experts for the defence might have been present at the exhumation of the body and the subsequent analysis, and thus give at least the appearance of fairness to the procedure? We venture to assert, without fear of contradiction, that such an *ex parte* proceeding would never have been permitted in any country in Europe; and will never again be allowed, it is to be hoped, in our own country.

One other point only we especially regret to be obliged to animadvert upon, and that is the unnecessary harshness exhibited by the learned attorney-general towards some of the witnesses. That even distinguished lawyers should be proficient in all the mysteries of chemistry or medicine, is not to be expected; but when such undertake to cross-examine scientific experts upon their own specialties, and perplex and embarrass them by a bungling mode of putting questions, which it is simply impossible for the witness to answer, we can hardly allow the ignorance of the questioner to be a sufficient excuse for a course of procedure such as we would expect to find only in a police court.

It strikes us also as being in exceedingly bad taste, and as by no means strengthening his cause, for the law officer of the State to make such an assertion as the one made by the attorney-general, "that the experiment and testimony of Professor McCulloch were either a fraud upon the administration of justice, or were the result of the grossest ignorance." Inasmuch as Professor McCulloch's experiments were repeated and verified by

Dr. Genth, and by Professors Reese and White, the attorney-general's vituperation was a virtual arraignment of all the chemical experts for the defence. It is scarcely necessary to reply, after what has been noted in connection with the chemical testimony for the prosecution, that the above remark was not justified by the fact that Professor Aikin failed to substantiate the experiments of Professor McCulloch; since it is sufficiently manifest from this trial, that the former chemist obtained results which the others could not verify; whilst, on the other hand, he was not able to verify the results which all the others testified that they had obtained.

We have thus endeavoured to give an impartial review of the scientific testimony connected with this trial; adverting also to certain important points incident to this evidence. With the *circumstantial* evidence, we, of course, have here nothing to do; nor is it our province, on this occasion, to express an opinion either as to the guilt or innocence of the accused party. As is generally the case in such trials, there was a considerable conflict of professional opinions, both medical and chemical, among the experts; and since it might be deemed invidious for us to attempt to decide for either party, we must be content to leave the decision with the intelligent reader.

PHILADELPHIA, 1840 Green Street.

ART. III.—*Note respecting the First recorded Case of Astigmatism in this Country for which Cylindrical Glasses were made.* By HENRY D. NOYES, M.D., of New York.

By the kindness of Dr. Gray, of the New York State Lunatic Asylum, Utica, I have come in possession of a pair of cylindrical glasses, which I suppose were the first ever made in this country. They belonged to Rev. Mr. Goodrich, who at the time of his death was chaplain to the asylum. They were given to me wrapped in a piece of writing paper on which, in the owner's handwriting, was inscribed the following memorandum:—

“No. 7 French No. (number) cylindr. con., got of McAllister, May, 1828. I wore 14 months, *i. e.* till July, 1829. Again put into use March 11th, 1843; they were laid aside Dec. 10th, 1850.”

Why they were laid aside I do not know, the owner at the time of his death was of considerable age, and at 1850 was about 50 years old. It seems that they could not have perfectly met the necessities of his vision, because he wore them only for certain periods of time. But these were long enough to show that from them he derived great advantage. The glasses, I find, are plano-concave cylindrics of 7 inches focus, with axes horizontal, and were mounted in a spectacle frame with oval eyes. The maker is the old and well-known optician, Mr. John McAllister, of

Philadelphia. These glasses have become historical, as I have no doubt they are those to which reference is made in the American edition of *Lawrence on the Eye*, page 669 (1854), in a foot note by Dr. Hays. In that statement the number and kind of glass is not given, and in the allusion to it, which Donders makes, in his work on refraction and accommodation, page 541, New Sydenham Society's ed., 1864, he calls attention to this circumstance. The account of the matter as given by Dr. Hays, in Lawrence, is in the words of the clerical gentleman who used the glasses, and perhaps it will be interesting to refer to it to learn how the choice of these glasses was arrived at.

"From my earliest years I have been sensible of a deficiency in sight, which I was induced to call near-sightedness, because I was obliged to approach nearer to objects to see them, than most persons, which is still the case. This deficiency, until I was about 16 years of age, was accompanied with weakness of sight, but my eyes are now strong. I commenced my studies regularly at the age of 19, and am now 24. Close study has had no other effect on my sight than to strengthen its endurance, but not its precision or length. My right eye is and always has been much better than my left, but the defect in both is precisely of the same nature. At the age of 16 I procured a pair of plain green glasses, which were some little assistance in moderating the intensity of the light. I tried to get concave glasses, but could find none that were of any essential assistance. I afterwards used a small convex lens of about 10 inches focal distance, as a microscope, to assist me in reading, which was some assistance, but during the five years of studying, I have used no glasses whatever. In November last (1825) I procured a pair of concave glasses in New York, about 5 or 6, which will accompany this letter. Until then I had never discovered that a change of position had any influence on my sight; but in looking through these glasses I found that any object whose length is in a horizontal direction appears much more distinct than a similar object whose length is perpendicular to the plane of the horizon. Thus the cross-rigging of a ship appears much more distinct than the mast and perpendicular ropes. I have since been led to make experiments first on my naked eye, and then on it in connection with my glass which I send you, and the result at which I have arrived has been universally the same.

"Suppose I stand in an erect posture, then let fh , eg (Fig. 1) be any object, the parts of which are equal and similar, and of which fh is perpendicular to, and eg parallel to the horizon. Then the part fh will appear plain, but the part eg will not. Now, if I turn my head from a perpendicular to a horizontal position, the reverse takes place, that is, eg appears plain, but fh does not.

Fig. 1.

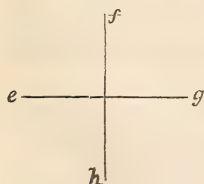


Fig. 2.

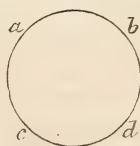
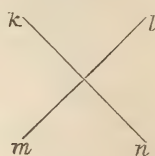


Fig. 3.



"Again, let $abcd$ (Fig. 2) be a circle; then if the above statement be correct, when I stand erect the parts ac and bd will appear plain, but ab , cd will not, which is the fact. Furthermore, if I turn my head a right angle (that is to a horizontal position) then ab , cd become plain, but ac , bd do not. It seems almost superfluous to add that a figure like $klnm$ (Fig. 3) appears uniform in both the lines kn and lm , when the body is in an erect posture.

"These facts would lead me to conclude that the crystalline lens of my eye is cylindrically convex or, perhaps, oblately convex, and that its greatest length is in a perpendicular direction (that is, in a line parallel with the length of my body); consequently I would conclude that a glass whose shape resembled the probable shape of the crystalline lens of my eye, placed before my eye so that its greatest length would be at right angles with the lens of the eye, would produce a perfect image.

"All that I have said in relation to the diagrams above is strictly true in relation to my naked eye, and if I could here wind up the difficulty I should stand in some hope; but the fact is the moment I put on my concave glasses everything is exactly reversed; the line $f h$, which before appeared more distinct than line $e g$, now becomes as much less distinct, and in relation to the circle the parts $a c$ and $b d$, which were before more distinct than the parts $a b, c d$, now become as much less so.

"The figure $k l m n$ will appear much as it did to the naked eye, except that it is a little more distinct, and, perhaps, a little smaller; but what I mean is that it appears uniform through the glasses as it did to the naked eye. If it be true that my eye requires a glass whose shape does not correspond to a portion of a true sphere, but rather to a portion of a spheroid or, perhaps, a cylindric, I cannot tell from any observation I have yet made on my eyes, whether the glasses should be of the concave or convex form. The great difficulty is why should the appearance of objects be entirely changed by the interposition of a concave glass? When I purchased my glasses I was not aware of this curious fact in regard to my eyes either with or without glasses. I only knew that I got those through which, on the whole, I could see best. If it be asked whether I consider the glasses in question are essential assistance to my sight, I answer that if my object be to examine a horizontal object, they truly are assistance, and they are so in the examination of a perpendicular one, provided I turn my head a right angle."—*Lawrence on the Eye*, Amer. ed., edited by I. Hays, M.D., 1854, p. 669.

His observation of his symptoms was able and acute, and his conjecture as to their probable cause correct in an optical sense. He doubtless had simple astigmatism, or the spherical glass needed in addition to the cylindric must have been weak.

In reviewing the above case, it may be instructive to note some of the points which the writer with keen observation makes prominent.

1. He used a convex 10 glass in his youth as a magnifier, with some advantage. By enlarging the image the indistinctness of outline became less conspicuous, although the actual definition was not improved. This use of a convex spherical glass where the error called for a concave cylindrical glass is paralleled by some cases of hypermetropic persons who, to help their vision at a distance, have resorted to concave instead of convex glasses, and by extraordinary taxation of accommodation with reduction in the size of images, have been able to see what otherwise they could not.

2. The illustration from the rigging of a ship is very apt, and is worth remembering in questioning patients. It is evident that the vertical meridian was the strongest, and the horizontal must have been almost normal. With his concave spherical glasses on, horizontal lines were distinct and vertical ones indistinct; without his glasses the reverse was true, as he illustrates by his figures. Supposing his eyes to be myopic $\frac{1}{2}$ in the ver-

tical meridian, the mast of a vessel would appear on its sides distinct, but at its ends be very hazy, because the rays entering the eye in the horizontal plane come to a correct focus, while the vertical ones meet in front of the retina; but this error cannot show itself in the image of a vertical line except in its extremities. On the other hand, horizontal elongated objects, like the spars of a vessel, would appear clean cut on the ends, the only portion where the correct refraction of the horizontal meridian of the eye could show its effects, but its margins, in virtue of the fault in refraction in the vertical plane, would be unclear.

If the author had ever happened to resort to the simple device of looking between his nearly-closed fingers, extended before him horizontally, making thus a horizontal slit, he would have been pleased and amazed to find that both spars and masts would be well defined, although less bright.

3. For lines oblique to the horizon there could no distinct image, and, therefore, figure 3 appears alike in both limbs. He failed to note, in looking at a circle, that, besides the distinctness in definition of its sides as compared with its top and bottom, its shape became ovoidal with the long axis vertical.

4. The supposition that his lens must be cylindrically or oblately convex with its long axis vertical, was founded upon a wrong explanation of the reason for the greater distinctness of vertical lines. This superiority being in fact due to the good definition of the sides of such lines, which results from the correctness of refraction in the horizontal plane. Vertical lines may be assumed to be made up of a succession of square dots, or circles in close contact. Now, as the sides of circles appear clear, the addition of many dots to each other in a vertical sense gives a line whose sides are clear but ends dim.

5. By putting on concave spherical glasses, which carry the focus farther back for all meridians, the vertical meridian becomes correct, and causes the sense of clear definition to be just the opposite of what it was, viz., for horizontal objects, because top and bottom are clear, while the ends run out in brushes. But the horizontal meridian of the eye is now over-corrected and made hypermetropic, the focus going behind the retina. This error can in some measure be overcome by vigorous accommodation, and the form of a square object might be tolerably well made out by permitting the eye to rest without effort on its horizontal boundaries, and by making a strong accommodative effort in scanning its vertical contour. In this way a person with simple myopic astigmatism may gain clear sight with concave spherical glasses.

The naive suggestion, that, by turning his head a right angle in viewing successive parts of an object, he could compass correct vision, was rendered superfluous by the cylindrical glasses. The case is remarkable, and one reflecting credit upon the clerical patient and upon the optician. Physio-

logical optics had not yet entered upon the high career to which it has since been brought, and what in 1826 was only dimly understood, was in 1856 by Helmholtz, and in 1864 by Donders, brought to the light of perfect demonstration.

NEW YORK, 73 Madison Avenue.

ART. IV.—*Observations on the Eustachian Tubes, with Description of an Instrument for their penetration by Rhinoscopy.* By EPHRAIM CUTTER, M.D., of Woburn, near Boston, Mass. (With four wood-cuts.)

ACCORDING to Tröltsch most anatomists suppose the Eustachian tubes to be the remains of the first embryonal bronchial fissure, probably because they are compound structures, being composed of membrane, cartilage, and bone. The average length (Tröltsch) is about $1\frac{1}{2}$ inches, or, more accurately, 35 millimeters, of which 24 belong to the cartilaginous and 11 to the osseous portion.

At the pharyngeal orifice it is 9 mm. in height, in breadth 5 mm. At the tympanic orifice it is 5 mm. in height, in breadth 3 mm. At the inner end of the cartilaginous portion it is 2 mm. high, and 1 mm. wide. Thus the Eustachian tube is not uniformly cylindrical, but slightly trumpet-shaped at both ends, or rather two frustrums meeting at their narrow extremities; *vide* Fig. 1, which represents an outline of the tube according to the above measurement of Tröltsch. An Eustachian tube which the writer removed from a dissecting-room subject, aged eighty years, presented a uniformly cylindrical appearance, much different from that stated by Tröltsch.

The constituent parts are not diffused equally throughout the whole calibre. The cartilage composes about two-thirds of the tube which lies toward the pharyngeal orifice. This two-thirds is disposed on the posterior part of the tube. It is a thin lamina, difficult to separate by dissection. The remaining third of the tube is membranous. This disposition of cartilage is analogous to that in the trachea. The evident object is to secure a patency of the tube.

The membrane of the inside is corrugated in the direction of the long axis of the tube. It is covered with ciliated epithelium.

The position of the faucial end of the Eustachian tube is described to be opposite the middle turbinated bone. When it is known that in some cases a rhinoscopic examination shows *an entire absence of the middle turbinated bone*, the accuracy of this statement may well be questioned. The fact is that the Eustachian orifice opens at different points in different subjects. Sometimes, as in the writer's case, it is found to be

Fig. 1.



opposite the upper and outer quarter of the posterior nasal openings.

Fig. 2.

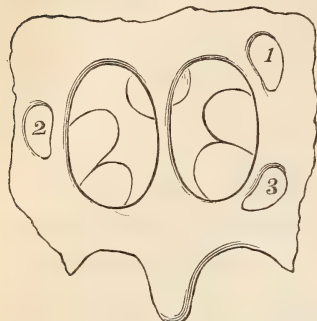
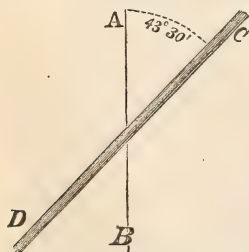


Diagram of the Posterior Nares, looking from within outwards: 1. Is the position of the Eustachian orifice in the writer's case; 2. Is the second position named; 3. Is last position. *Vide Mackenzie on the Laryngoscope*, edited by Dr. J. Solis Cohen, Philada. ed., 1869, p. 282.

head. One of the cases was in a specimen in the Warren Anatomical Museum, from a child eighteen months of age, access to which was kindly given by Prof. Jackson, curator. A straight probe was thrust into the Eustachian tube and held there by contact. A large portion of the probe projected. The half head was then held over a straight line marked on a piece of paper in such a manner as that the vertical surface corresponded with the line. The points where the projecting probe covered the line, and where it terminated over the paper were marked. On connecting these two points with each other by a pencil-mark, the angle of obliquity was given.

Fig. 3.



CD represents the antero-posterior median line of a vertical section of the head. *AB* is the probe marking the direction of the Eustachian tube. The angle represents the obliquity of the tube.

Sometimes it is opposite the middle, and sometimes opposite the lower quarter. Thus Fig. 2 shows this variety in position.

With this variety of position how can rules given for the introduction of the Eustachian catheter through the nose be definite? Why not call in the aid of the rhinoscope, and ascertain the situation of the orifice before attempting a catheterization? Otherwise it is guess-work; an inexact procedure, unworthy of the present state of our knowledge.

The direction of the Eustachian tubes is generally described as from within outwards, backwards, and upwards. In order to give more definiteness to this description, the writer measured the angle which the Eustachian tube makes with the antero-posterior vertical median plane of the

This was subsequently measured on a tractometer (an instrument for measuring angles), and was found to be $43^{\circ} 30'$. *Vide Fig. 3.*

The other case of admeasurement was in a dissecting-room subject, female, 82 years of age, through the kindness of Dr. John W. Mead, of Lowell. The obliquity was the same as in the first case. So that probably one would be safe in saying that the direction of the Eustachian tubes is in the neighbourhood of 45° backwards. In the cases measured there was no upward direction as the probe stood horizontally. The writer wishes that observers would measure this angle on different subjects as they have opportunity, and report the same, even if it is only

one observation. It is only by multiplied scrutinizations that general laws can be laid down. A report must not be despised because it involves only a *single* instance, because experience is but an aggregation of single events. If the integral parts are withheld there can be no whole.

The question of the patency of the faucial Eustachian orifices is a vexed one. The majority of observers maintain that they are closed *except* during the act of deglutition. We coincide with the view *that they are always open normally*, contrary to what we have before advanced (*Vide Boston Med. and Surg. Journal*, Feb. 1867), "That they are always open except during the act of deglutition."

The following considerations are adduced in support of this position: 1st. The anatomical characters of the tube; 2d. The physiology; 3d. Actual observation.

The *anatomical characters* of the tube we have seen are bony towards the tympanic end; that certainly cannot close, except by being filled up from the inside. This would not be a physiological, but a pathological condition. The remaining portion is partly bony, partly cartilaginous, and partly membranous; so much so that it is impossible to conceive of any contact of the internal walls, except at the pharyngeal orifice. This is more apparent when we consider that the membranous portion of the Eustachian tube occupies only one-third of the circumference. To close up the tube would require the collapse of this membrane, and the bending together of the cartilage; so that the inverted membrane should fill up the space embraced within the concavity of the cartilaginous walls. But the cartilage and the membrane are attached to the surrounding parts, so that the amount of inversion required, which is very considerable, cannot be accomplished. The trachea, which is about two-thirds cartilage and one-third membrane, does not collapse and its walls come in contact during physiological acts. Neither does the meatus auditorius externus, composed of cartilage and bone, ever collapse physiologically. The nostrils are analogous in structure as to bone, membrane, and cartilage, they close only by voluntary act physiologically.

The other orifices in the body that are known to close and open, such as the oral, anal, puncta lachrymalia, urethral, vaginal, œsophageal, stomachic, ileo-cæcal, &c., have anatomical characters not resembling those of the Eustachian tubes. Anatomical structure and analogy point to the function of the Eustachian being always open normally.

The physiology. It is generally believed that the most important of the functions of the Eustachian tube is to maintain a communication between the internal ear and the external atmosphere. Were the internal ear a closed cul-de-sac, the vibrations of the tympanum would be deadened. If the internal ear, besides being a closed cul-de-sac, were a vacuum, the delicate tympanum would be distended inwards, if not ruptured, by the atmospheric pressure of fifteen pounds to the square inch. It seems to

have been the design of the Creator to bury the organs of hearing, which are of exquisite sensibility, deep in a bony cavity, out of the way of harm, and yet so sensitive to the vibrations of the outside air that they are capable of detecting vibrations which play over one thousand times a second!

Now, if the Eustachian tubes did not afford the communication to the outside atmosphere, it is difficult to understand how the function of hearing could be performed at all. Indeed, when the Eustachian tubes are closed, for example by inflammation, its processes, or results, this closure is a sufficient cause for the deafness which results. Now, if the Eustachian tubes are closed *except* during the act of deglutition, would we not expect that deafness would exist except during a meal? Or, if we take the other proposition, one which the writer formerly maintained, namely, that the Eustachian tubes are *closed only during the act of deglutition*, should we not expect a momentary deafness while deglutition was performed?

It was by observing that there was no deafness or occlusion of hearing during the act of swallowing, that the writer has been led to review his position, and to maintain that the Eustachian tubes *are open at all times during normal condition*.

Another function is the affording a canal whereby egress may be found from the internal ear for secretions which form therein, and if retained would mechanically distend and interfere with the function of the internal ear. I doubt whether there are any such secretions *normally*; abnormally they may occur. Whenever they do exist, would they not be discharged better through Eustachian tubes permanently open, than through canals generally shut? So that the function of affording egress favours a patent condition of the tubes.

The Eustachian tubes being at all times open, allows of the introduction of air by diffusion; as in the lungs, the air penetrates the cells at the extremities and sides of the terminal bronchial divisions. The cavity of the tympanum is a closed cul-de-sac. The vibrations of the tympanum and motions of the ossicles cannot exclude all the air, as they are not extensive enough. We are left to fall back upon diffusion as a sufficient and satisfactory cause of the change of air in the cavity.

Take the simple Valsavian experiment, which "consists in pressing the air into the ear, after a powerful inspiration, the mouth and nose being closed." When the organs are healthy the air is pressed and condensed into the cavity of the tympanum, and the tympanum stretched, and is forced outwards, as appears by inspection and subjective sensations. On the other hand, if the mouth and nose are closed, and the air exhausted by sucking and swallowing, the tympanum is stretched inwards. Moreover, if the tympana are absent or perforated, the air rushes out with an audible noise, and water injected into the meatus externus passes freely into the throat. Now, on the supposition that the tubes are closed except

during the act of deglutition, it is difficult to conceive how the air could so easily distend the drums in the Valsavian experiment, or the water pass in the other. If the other supposition, that the tubes are open *except* during deglutition, it is also difficult to reconcile the facts, as during the Valsavian experiment the soft palate is drawn up against the post-pharyngeal wall, crowding, if anything, the Eustachian orifices together towards closure. On the supposition that the tubes are open at all times normally, it is easily seen how air and water can be sucked from or forced and injected through against the air which is in the cavity of the tympanum.

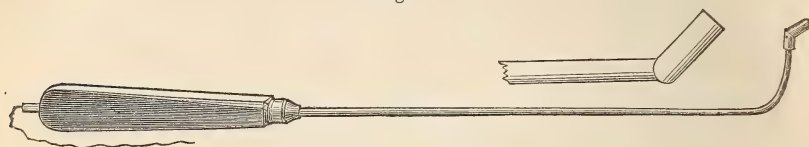
Observations by the rhinoscope favour at first sight the view that the tubes are closed during deglutition. A partial narrowing is seen of the outlet as the soft palate is drawn up by the tensor palati muscles, but as the palate approaches close to the post-pharyngeal wall it obscures the view, so that it is impossible to tell from inspection how the orifices appear when the palate has made its complete air-tight fit against the post-pharyngeal wall. The writer has examined his own and other Eustachian orifices repeatedly, and they always have been found to be open, in what was considered a healthy condition. Dr. L. Elsburg, of New York city, takes the view that the Eustachian tubes are closed by a contact of their inner parietes; that this closure is not tight, but loose. He compares the contact to that of the vaginal walls in healthy females. Air forced easily passes, as the obstruction is so slight. So that practically the tubes are always open. I am obliged to dissent from this view, although its results are the same as mine. On the other hand, in some cases of deafness he has found a closed condition of the orifices. So that on the view that a patency of the Eustachian tubes is their normal condition, it has occurred to him to suggest a means of penetrating them with air or otherwise.

Taking the ground that the Eustachian tubes do not always open into the pharynx at the same points, as shown before, it is deemed advisable, when possible, to make a rhinoscopic examination, and find out where they are placed and what is their condition; then, bearing in mind the direction of the Eustachian tubes, as before described, to approach them from the mouth with a catheter, which is a simple brass or silver tube, eight inches long, three-sixteenths inch in diameter, provided with a handle at one end, and at the other bent up to a right angle for about one inch. This instrument brings one to the *mouth* of the Eustachian tubes. To enter these tubes by air, for instance, another piece of tube similar in size and material, $\frac{1}{4}$ inch in length, is soldered at a right angle to the long axis of the terminal branch of the tube. At the same time it is placed forwards to the left, if for the right Eustachian tube, at an angle of 43° , with a vertical plane running through the long axis of the instrument. If intended for the left Eustachian tube the terminal bar is placed on the right.

To recapitulate, it will be seen that this instrument follows mechanically

the directions into the Eustachian tubes from the mouth, viz.: 1st. The long axis follows that of the mouth; 2d. The bent portion follows the long axis of that part of the pharynx behind the soft palate; and 3d. The terminal bar follows the angles which the Eustachian tubes make with the pharynx.

Fig. 4.



Eustachian Catheter of the writer.

To use this catheter it is necessary to ascertain the position of the Eustachian orifices by means of the rhinoscope. The catheter, flat side parallel to the tongue, is passed just behind the velum palati. A quarter turn will bring the end uppermost without touching the uvula or palate. Then by means of the reflection in the mirror, the terminal end is brought into contact with, and buried in, the Eustachian orifice desired. All these procedures being done under sight, there can be no question but that the instrument is fairly engaged in the tube. Air or water, or atomized liquids, may then be easily forced into the tube, as deemed advisable by the operator. Air may be blown from the operator's mouth by means of an India-rubber tube, which is slipped over the proximal end of the catheter.

In order to introduce tents into the tubes, a modification of this catheter is necessary. Instead of having the terminal bar soldered on, it is provided with a socket which fits on, and allows of motion in a circle about the end. A small hole is bored through the socket, and a fine wire is passed through and knotted. The other end of the wire is drawn through the tube and brought out beyond and bent up towards the handle. The object of this wire is to hold the socket in place during introduction and rotation. If it is desired to introduce a slippery-elm tent, for instance, the process is as follows: A piece of slippery elm $1\frac{1}{8}$ inch in length is fitted into the cavity of the terminal branch, so that about one inch projects. This portion is rounded, pointed, and moistened with water. It then becomes very slippery. The fine wire is drawn tight and fastened about the handle. If the tent is set at the angle of 43° , it is easily seen that it cannot be introduced, as the point projects too far forward to get safely under the soft palate. It is necessary to set the tent at an angle of 90° with the vertical plane of the instrument. It is then introduced into the pharyngeal cavity, as described; except that just before the point of the tent reaches the soft palate it is depressed behind the tongue until the point clears the velum, and the upward turn is made, which brings it behind and lying parallel to the velum. A sidewise movement brings the

point to the Eustachian orifice, and continued engages it and the tent in the tube—the tent rotating from the angle of 90° to that of 43° as it progresses in the penetration. If desired, the tent and terminal branch and wire may be disengaged and left in. The wire serves as a means of communication, and preventive of swallowing the tent, should it chance to become disengaged and drop out.

There should be one catheter for the right and one for the left.

ART. V.—*On Hectic Fever.* By FRANCIS D. CONDIE, M.D.,
of Philadelphia.

Is hectic fever to be considered an essential, pathognomonic feature of pulmonary phthisis? Few physicians, we suspect, called to a patient who, after a lingering illness, has become, gradually, greatly emaciated, with a quick and feeble pulse, who is daily subject to attacks of chilliness, more or less marked, followed by flushings of heat, a dry, parched skin, circumscribed redness of both cheeks; one such paroxysm of chilliness occurring in the twenty-four hours, between two and three o'clock of the afternoon, or, not unfrequently two, the second occurring just before night-fall, both paroxysms terminating—the one during the early portion of the night, the other towards morning—in a copious, clammy, and exhausting perspiration; few physicians, we repeat, observing in a patient such a group of symptoms, especially if, in addition, there is short, impeded respiration, frequent cough, with expectoration, would not pronounce him or her to be labouring under tuberculosis of the lungs, and in a large number of cases his diagnosis would be perfectly correct.

The symptoms above described, taken in connection, are unquestionably those most usually observed in patients labouring under pulmonary consumption, especially in the protracted stage of the disease.

Hectic fever, however distinctly developed, is by no means pathognomonic of pulmonary tuberculosis, even when accompanied by impeded or disturbed respiration, cough and expectoration. Such a group of symptoms mark, usually, cases of spurious consumption (chronic bronchitis and pneumonia), while hectic fever is the attendant upon a large number of cases of disease in which no affection of the respiratory organs is present, as is proved by repeated post-mortem examinations. In the course, in fact, of any disease, in exhausted patients in whom there exists a chronic source of irritation, hectic fever is liable to be, is, indeed, generally developed.

Though a common attendant upon pulmonary tubercular phthisis, yet it is not so invariably, and, consequently, is not pathognomonic of that form of disease. According to Louis its presence will be found wanting

in one case out of ten. According to our own experience, however, the fever is absent less frequently than this.

It has been supposed by some that hectic fever is dependent on slow, continued suppuration in some internal part or organ, and by others, that it is caused by the reabsorption of pus from internal or deep-seated abscesses. Such opinions, however, are based on no series of well-established facts. Hectic fever, it is well known to every observing physician, is present in very many cases of pulmonary tuberculosis before any softening of the tubercular deposits has taken place, or any abscess has been formed in the lungs. It is, in fact, in those patients who are of an eminently strumous diathesis, one of the first indications of the mischief going on in the lungs. Hectic fever, we may remark, has, in no case, any direct relation to the extent of the suppuration going on at the time, or which had preceded its onset.

It is a well-established fact that hectic fever is of common occurrence in cases of debility, when the patient has been subjected, for a long time, to some continued source of irritation, but in whom, it is very certain, there is no process of suppuration going on, in any portion of his organism. This, our observations teach us, is especially the case in those who are of a strongly marked nervo-lymphatic temperament. On the other hand, hectic fever is absent in very many cases of chronic disease, throughout the entire course, in which suppuration had been going on for a long time, an impediment existing to the free discharge of the pus. We have had, in numerous instances, under our care cases of paronychia, which had run on to suppuration, and of large collections of pus seated beneath the fascia of the thigh, in cases of neglected periostitis femoris, a disease of not unfrequent occurrence during childhood, and always attended with much suffering and emaciation, but usually without hectic fever.

From the foregoing facts, it will be perceived that, of itself, the presence or absence of hectic fever furnishes no certain evidence of the presence or absence of pulmonary disease, and, under no circumstances, is it of any value in the establishment of a correct diagnosis between the tubercular, and what we have ventured to denominate the spurious form of pulmonary phthisis, it being as often present in the one as in the other.

ART. VI.—*On the Use of Bromide of Potassium in Rattlesnake Bites (Crotulus horridus).* By E. A. ANDERSON, M.D., of Wilmington, N. C.

POISONING by bites of venomous serpents is of frequent occurrence in the Southern States, and particularly in the region in which I reside, and I determined to try the efficacy of bromide of potassium in very large doses

in these cases, being led to do so by the conviction that it was the efficient agent in Bibron's vaunted antidote.

CASE I. On the night of the 24th of April, 1867, I was hastily summoned to Miss C. J., æt. 17, who, while walking in the garden with a young friend, stooped in the dim twilight of a spring evening to pick some violets, when she sprang back declaring that she was bitten in the thumb of the right hand, which caused her extreme pain. This was followed by great prostration, disposition to faint, and coldness of the limbs. At the same time her companion heard the horrid rattle of the snake, and perceived it rapidly gliding away.

I found the patient lying on the sofa suffering from excruciating pain in the thumb bitten, extending up the arm to the shoulder of the same side, great tumefaction of the arm, general coldness and lividity of the surface, pulse almost imperceptible, respiration slow and laboured, countenance haggard and distressed. Previous to my arrival they had administered whiskey in very large quantities, and had immersed the hand and feet in hot mustard and water. Still the pain was excessive, and there was little or no reaction. I continued the whiskey in large doses every fifteen minutes, warmth to the surface, and gave the following preparation, viz. : Bromidi potassii ζ ss; Aquæ ζ vij. Take a tablespoonful every hour until the pain is relieved and sleep ensues.

I remained some hours with my patient, pushing the stimulants and bromide of potassium in fifteen grain doses every hour; in about four hours reaction came on; the surface became warmer; pain diminished, and she slept tranquilly. The arm was still very much swollen. I then left, directing the bromide to be resumed as soon as she woke until the whole was taken. Upon examining the thumb I perceived four distinct impressions of the teeth of the snake in its pulp, which eventually sloughed out, leaving a hole as large as the end of the tip of a cigar down to the bone, a part of which eventually necrosed and came away.

25th. Next day, some fourteen hours after the accident, I found that patient had taken all the bromide; was free from pain, and reaction entirely established; arm still much swollen, and she was very weak; had slept some four hours.

26th. Still improving; no pain, but much stiffness and tumefaction of the entire right arm up to shoulder; great prostration; pulse slow and weak; some appetite; ordered whiskey occasionally and rest. This case continued slowly improving for a week, when she was enabled to ride on the railroad some fifty miles, and then I lost sight of her; but, with the exception of the sloughing of the tip of the thumb, I heard that she had entirely recovered.

The treatment in this case consisted exclusively of large quantities of whiskey, which has for many years been employed in this section for snake bites, and bromide of potassium in addition. It is true that many cases of rattlesnake bites recover under the exclusive use of alcohol, but many die in spite of its employment, and the pain is always intense for some time. The bromide in this case promptly allayed pain, produced sleep, and seemed to cut short the dangerous symptoms. I am satisfied that she would have died had she been left to the stimulants alone, and that the bromide was the more efficient agent.

CASE II. On the morning of the 30th of September, 1870, I was summoned to visit a stout, athletic negro, æt. 24, on a rice plantation, who had been bitten by a rattlesnake of enormous size on the outside of the left knee, showing the imprint of four teeth; the snake escaped, but was seen by a number of the labourers, who all concurred after a rigid cross-examination in describing it as five inches in diameter, of the size of a man's arm, six feet long, and having fifteen rattles, showing it to be of great size and venom. The patient was carried to the negro quarters and laid on a piazza in the open air, as the thermometer was then 80° Fahr. in the shade.

On my arrival he was crying out with intense pain; limb not much swollen as yet; countenance anxious, haggard, expressive of great anguish; no pulse; hands, feet, arms, and legs icy cold; respiration very slow and laboured, apparently moribund; with much difficulty I forced brandy down his throat at regular and short intervals, and applied hot bricks to his hands, feet, and arms. As soon as he could be persuaded to swallow, gave twenty grains of bromide of potassium every hour, until he had taken 240 grains, or half an ounce in seven hours, along with the whiskey. The pain speedily lessened, reaction soon came on; tranquil sleep ensued, and next day he was much better, though weak, and limb very much swollen and stiff.

His recovery was gradual, and at the end of a week all danger had passed. When I last visited him he was still very weak and his leg stiff; no tumefaction in the joint, but inability to move the knee except very slightly.

The beneficial effects of the bromide were very marked in this case, as manifested in the reaction, sleep, cessation of pain, and general amelioration of the symptoms.

The snake was one of the largest and most deadly species, and I fully believe, that, if treated with alcohol alone, death would have ensued. Although *non unus hirudo facit ver*, still, from the striking result of the bromide in these two cases, I would be inclined to try it conjoined with a free use of alcohol in any other that might fall into my hands; at least until something better is proposed.

ART. VII.—*Description of an Epidemic Malarial Colic which prevailed at Iquitos, Peru, in the Autumn of 1871.* By FRANCIS L. GALT, M.D., of Iquitos, Peru.

THE following notes on an epidemic were taken by the writer, under whose observation the disease occurred, in October, 1871; and, in order that the causal relations may be defined, it will be proper to sketch, even though rapidly, the topography of the locality where it was noticed.

The village of Iquitos is located in the northwestern part of the great Amazon basin, some 2400 miles from the mouth of the Amazon itself, and situated immediately on the north bank of that river. It lies in latitude

3° 44' 15" S., and longitude 75° 00' 30" W. It is built on a bluff, some forty feet high, overlooking the river, which is here some three-quarters of a mile wide. The soil is sandy alluvium with clay. The land slopes, on the land side, towards a small stream which nearly encircles Iquitos at the distance of some two miles, and which empties into the main river some three or four miles below the town. Some quarter of a mile above the village another small stream debouches into the Amazon. The land about the place is several feet above the highest rise of the river level, though in the rainy season the Indian pathways about the woods are almost impassable, and the small stream first mentioned overflows for some distance from its margins. At some three and a half miles to the southwest is a lagoon which has an outlet into this stream. A very dense growth of forest timber and an almost impenetrable undergrowth pervade this country, even up to the village of Iquitos itself, forming a continuation of the immense low country of the Amazon valley. To the south and east and southwest, this valley extends for hundreds of leagues, being cut through by the large river, and the largest affluent of the Peruvian Amazon, the Ucayali. To the north and west the spurs of the Eastern Cordilleras of the Andes are encountered at varying distances of from 1 to 300 miles. Through this dense mass of vine, parasite, and foliage, the sun rarely ever makes its way, and there is a damp coolness, especially about the parts on the river borders, after the waters have disappeared, which forms a striking and pleasing contrast to the heat of the exposed localities, though the extraordinary amount of atmospheric moisture in this upper part of the Amazon makes a marked degree of difference in the sensible as well as actual grade of temperature as compared with the lower Amazon. The range of the thermometer during the year is, from an average made from 9 A.M. to 9 P.M., 25° Cent.: the mercury never falls below 16° at night, and that figure is only to be noticed during some two or three cool days in July or August, which occur on the whole length of the Amazon River. During the rest of the year the night temperature is never below 20°. The wet bulb shows for the year a difference of some three or four degrees with the dry thermometer, though in October, November, and sometimes August and September there may be 5° difference. The quantity of rainfall, though as yet not accurately measured, probably is not over 100 inches, the greater part of which is noticed from December to April. In the dry season, from May to November, there is the greatest difference of the mid-day and night temperatures. During the chilly days in July and August cloth clothing is comfortable, the system so used to a constant high grade of heat being easily impressed by a change of some five or six degrees of temperature, which would not be noticed in our more irregular climate. During the dry season the winds which are the most frequent and the coolest are from S.E., the warmest, and those more noticed in the wet season, being the N.W.

The most notable feature of the climate of the Upper Amazon, on the borders of the main river, is its healthfulness, especially its freedom from the presence of malarial fevers—a circumstance which has been noticed by all travellers on the whole length of the Amazon—the universal experience being that it is only when explorers leave the main river, and proceed up to the rocky country from which the affluents flow, that the malarial intermittent or “*Queciana*,” as that complaint is known here, is encountered. The writer, in the months of November and December of 1870 and of January, 1871, was on an exploring trip to the head waters of the Ucayali, a stream some 900 miles long, and the universal testimony was to the healthfulness of this river, which should, probably, more rightly be considered as the continuation of the Amazon, owing to its great size. All those with whom he conversed, some of them intelligent Spanish friars, repeated the statement above made, and it was only on the small streams flowing into the Ucayali and Marañon that fever was to be encountered. In a party of some 100 souls who went as high as the Tambo River, some camping out on shore, and all exposed to night air under varying circumstances of humidity and heat, but a single case occurred, and that was in an Indian who had had the intermittent fever some two years or more before on the Huallaga River, an affluent of the Amazon, which flows through the rocky piedmont district of the Eastern Cordilleras. The traders on the Upper as well as the Lower Amazon all bear a like testimony as regards fevers. And though some cases before the time of the epidemic in Iquitos had come under the notice of the doctors here, they were always, I believe, found to be merely repetitions of attack, originally brought on by great exposure during their trading operations on the small streams leading into the Amazon at one point or another. Dysentery, which in the tropics is so often to be found as a sequel of malarial disorder, is comparatively infrequent, and, as far as I have seen in my short career of eighteen months here, very easy of control; and I am informed to the same effect by the government medical officer. It more frequently is to be found as a result of the vicious and wide-spread habit of dirt-eating among the half-breeds or natives on the rivers, and is then generally fatal, as might be anticipated. Considering the poor alimentation in this remote region, and the extreme carelessness of the natives, the traveller finds much to wonder at in the remarkable healthfulness of the dwellers on the Upper Amazon, the complaints apparently being very much more the result of personal imprudence than arising from any climatal causes of bad health.

The village of Iquitos itself when Hernern came down the river, was an Indian settlement of some 300 souls. The government of Peru, however, in 1864 established workshops here for the repair of steamers, and made it the headquarters of its military authority on the Peruvian Amazon. This, of course, attracted traders here. The workshops were supplied

with English machinists, the Portuguese traders from Brazil drifted towards the place, and it now has a population of some 2000 souls, divided among Indians, Mestigos, Portuguese, white Peruvians, English, and an occasional Yankee; at least four-fifths of the whole being half-breeds of Indian and white of the various nationalities. The houses are nearly all built of cane plastered with mud, and generally whitewashed. For the most part they are thatched roofed, and are strung together, as it were, to avoid expense of additional walls—one story high, having often partitions reaching some four-fifths of the distance from the floor to the roof, leaving a large ventilating space overhead. The streets are wide enough, but without pavements, and are mostly overgrown with grass, and in the rainy season they are filled with water which lies on the ground for weeks together and soon becomes covered with green slime. Into the streets, or the backyards, indifferently, are deposited the filth, human and animal, and a confused smell of nastiness pervades the whole village, the backyards being for the greater part of the year sloppy, often unsunned, and foul with every want of cleanliness, and are generally disgusting in the extreme.

There is no system of drainage adopted, and the water forms standing pools until it has slowly evaporated. In front of some of the tenements of the more sensible of the community, the grass is kept down by frequent cutting, and a patch of cleared dry soil forms a pleasing variety to the overgrown thoroughfares. There has been as yet no well-directed and well-sustained effort to keep the place clean or dry, though it could easily be done with a little system on the part of the proper authorities, and a continuous enjoyment of good health and tropical apathy combined contribute to make every one indifferent to the smells and sights which attract the notice of the most cursory observer.

Towards the close of the wet season, and about the beginning of the same, there is a somewhat more notable increase in the sickness. About June, July, or August, catarrhs are more common, and especially attract the notice of the public. During the last year at that time an epidemic of influenza extensively prevailed in Iquitos, attended with severe symptoms, though no fatal case occurred. About October dysentery is more to be noticed, and fevers among those who have been previously exposed elsewhere to attacks, but there is no severity in the symptoms, and, in fact, taking into consideration the want of public hygiene, it would be difficult to find anywhere in warm countries a place more free from severe forms of disease than is Iquitos. It is not improbable that in the course of time—a long way off, however—as the forests become cleared off and agriculture turns up the soil of this Amazon valley, there may be a large development of malarial disorders. As yet the heavy rains and floods, which act as natural scavengers for the decaying animal and vegetable filth, are a good police for the Amazon basin, and the unsunned forest keeps

the whole surface of the earth below a temperature necessary for fermentation of decaying material.

The general condition of good health in Iquitos, however, as well as above and below the river from here at some of the Indian settlements, was during the past year notably interrupted. As before stated, epidemic catarrh was prevalent here, and at other places near here, about July. After that disappeared—it lasted about six weeks—there was nothing unusual in the sanitary condition until about the 10th of October; the previous month or two, as said before, being unusual for dryness, high heats, and great differences in the day and night temperatures. The symptoms noticed in the first cases repeated themselves so exactly in some twenty or thirty others as to have justified the opinion of there being some epidemic cause of disease in the population of Iquitos, and those attacked were of the various nationalities to be found here, and the cases were all those of adult age, with probably two exceptions. The cases all occurred within some four or five weeks, with one or two exceptions, which appeared in December—long after the force of the epidemic had expended itself, and it originated apparently some 200 miles down the river, and recovered here under treatment. In three cases the characteristic symptoms supervened in the course of other diseases. One of the cases came here sick from the Huallaga River, some 200 miles above Iquitos, and was, with one exception, the most violent noticed, the active stages lasting longer than in any other patient, and the recovery more *rapid*.

In Grisolle's Pathology, under the head of "Colique Vegetale," the reader will find the symptoms of the disease very applicable to those noticed in the epidemic here, and will also see the synonyms of the complaint stated, such as "Colique de Poiton," &c. He will also, in the most recent edition, find that the author changes his opinion expressed in a former, and gives as a cause for these symptoms the presence of lead in the system of the person attacked. He will also there see that a writer, M. Fonssagrives, thinks that under the influence of miasms analogous to or identical with the "miasmes palustres," the same state of things might be engendered. The probability of the truth of this suggestion is almost made a certainty in the epidemic which I shall now detail as briefly as possible.

There were in about half of the cases certain prodromata, though not always well marked, and which would never have attracted the patient's attention by themselves. Such were an indifference about eating, a vague sense of lassitude, inclination to sleep, disposition to sluggishness of the bowels, and irregular and rapidly passing chilliness of the surface, occurring and recurring very irregularly in the twenty-four hours. This state of things would be noticed some four or five days before the patient sought medical advice. The first well-marked symptom for which relief was asked was pain in the abdomen, located by the patient at the epigastrium, or more

frequently about the umbilicus, shooting throughout all parts of the abdomen, and oftener from before backwards to the spine, coming on without reference to meals, and in a few hours amounting in all cases to great torture, causing frightful contortions of the body, ceasing for a moment or perhaps ten minutes, and then suddenly recurring. The agony in most of the cases was pitiable, the patient begging sometimes that something might be given to put him to sleep forever, and the successive attacks produced a most disagreeable feeling of dread at the anticipated return. The pain was not affected by pressure, never made worse, though now and then it afforded slight temporary relief. It was noticed in some of the cases that in these violent paroxysms of pain the sudden entrance of the medical attendant, or diverting the attention of the patient, would have the transitory effect of quieting him.

Nausea and persistent vomiting accompanied, sometimes preceded, the pain, and prevented often the administration of medicines for hours. The matters thrown up when the stomach was not distended by previous meals consisted of bilious, watery ejections, and in two cases the colour of the fluids were of a very pale *India ink* colour. Relief to the pain from vomiting was very fleeting. With this there was not the slightest febrile action of the pulse; the only frequency it showed was the result of the violent contortions of body during the pains or the vomiting. When the patient was quiet, the pulse was perfectly natural in every respect. In some five cases there were exceptions to this in an acceleration towards evening, and it was also noticed after the pain had lasted some two or three days that towards evening there was an increase in the violence of this symptom, the patient during the early morning being always better. On the second or third day of the disease there began to be noticed a yellowness of the conjunctiva; in two cases this was one of the premonitory signs, and this yellowness continued in an increased degree during the remainder of the attack, and some days after convalescence. In some of the cases the whole body had that peculiar bronzed and splotched appearance so marked in bad cases of yellow fever.

There was a singular freedom from headache during the whole of the disease, the mental faculties never at any time being in the least affected. Close questioning of the patients revealed that they felt at times, irregularly, a chilliness passing rapidly about the person, not having any relation to particular times of the twenty-four hours, except in three cases when this sensation was noticed towards evening more than at any other time.

It may be stated here that about one-fourth of the cases were pure-blooded Indians from whom it was difficult very often to get any account of sensations of any sort, the peculiar apathy of the race making them very poor subjects at a cross-examination.

In about one-fourth of the cases the patients had, at previous times,

been subject to chills and fevers contracted on their various canoe trips on the tributaries of the Upper Amazon; in one case, that of a Londoner, he had some years before taken quinia, apparently for some intermittent febrile condition.

In all cases the urine was high coloured, without albumen and clear—and this remained among the last symptoms of the disease.

The constipation was present in all cases, and extremely obstinate, seeming to defy all attempts at resolution by means of purgatives, whether given by enema or by the mouth. Attempt at purging was one of the modes attempted to relieve the disease at first, until the complaint seemed to be better understood, and it was wonderful sometimes to see what little effect violent drastics had. In fact, this constipation passed off with the disease independently of purgatives, the patient being relieved of it without any remedies applied for that particular object. The only good derived from enemata was the passing off large quantities of disengaged gas, which afforded temporary relief, flatulence being one of the most prominent and troublesome sequences of the costiveness and apparently paralyzed condition of the alimentary canal. Eructations were very annoying and often most offensive. The usual remedies for this symptom did not seem to be productive of any good effect.

The tongue was in all cases coated, generally yellowish-white—the colour of the tongue itself being a pale pink in most of the cases.

Prostration of the system was early induced by the constant pain and vomiting, and sometimes reached a serious point of debility; even after the active character of the complaint had disappeared, there was a long and tedious convalescence, somewhat owing, 'tis true, to climatal lassitude, and also to the very poor alimentation of this remote wilderness, which made it very difficult to get the proper diet for invalids. There was a notable complaint on the part of the patients of a "sinking sensation," referred to the epigastrium, accompanied often with a disagreeable abdominal palpitation, which troubled the patient for some days after convalescence had begun.

In about one-half of the cases, there was slight perspiration—in two it was profuse, and seemed to come on during the night.

In one of the cases, the most protracted of all, the patient had diarrhœa about a week before the beginning of the epidemic disorder. The diarrhœa was suddenly checked, and the pains began the following day.

There were no fatal cases, though several of them excited grave apprehensions, from the prostrating effects of pain and debility.

In commencing the treatment of these cases, the most obvious symptoms which called for relief were the excruciating pains and the vomiting, the character of which so resembled the ordinary colicky pains that anodynes and revulsives naturally recommended themselves. The medical attendant found himself, however, startled by the want of relief to both by the reme-

dies used ; there was very great toleration to the use of opium, and unusual quantities of its various forms seemed almost useless in giving the desired relief ; for a moment or half an hour the pains would be allayed, and the patient, refreshed possibly by a little sleep, would cry out suddenly with acute repeated paroxysms of the agony, which would pass off partially in half an hour, leaving him further prostrated by this and the repeated vomiting combined. It sometimes happened that the stomach became quiet in the course of some twelve hours, though the pains continued. The greatest relief experienced was by the use of small blisters to the epigastrium, which were sometimes sprinkled with morphia, though really the blister alone frequently did as much good as when followed by the opiate. It is not improbable that in some cases the flatulence was increased by the use of large amounts of narcotics. Carminatives, given to relieve the flatulence, and antacids seemed to be of little use, and, in fact, no medication applied with a view merely to the most conspicuous symptoms seemed to reach the bottom of the matter. The slightest thing taken to relieve the thirst, which was, by the by, a very marked symptom, increased the feeling of distension about the stomach and bowels, and there was a disgust for food of every sort.

The above is a sketch of the general plan of treatment used in the first three or four cases, which progressed poorly enough, the pain, anxiety, constipation, and flatulence continuing, causing sleepless days and nights to the patients and their friends.

It then was judged that, since there was a tendency to increase of severity of symptoms towards night, that now and then, about the after-part of the day, a vague chilliness was noticed, and taking the topographical position of the place into consideration, the administration of quinia should be experimentally tried, conjoined with calomel at first. The effect of this treatment made itself manifest surely and with reasonable rapidity. Valerian or belladonna was conjoined to quiet nervous excitability, the quinia being given to the extent of fifteen to twenty grains in the course of twelve hours. The use of the antiperiodic continued for one day made a notable impression on the attacks of pain, and refreshing sleep succeeded to restless nights. It was found, also, that costiveness, which had resisted "heroic" purging, gave way of itself as the bowels recovered from their paralyzed condition, and a copious purgation was frequently the signal for beginning convalescence. The quinia was continued for several days after the pain had subsided, in gradually diminishing doses, and the anodynes discontinued. The quinia was given in the form of pill generally, the stomach seeming to retain it more easily than when used in liquid form. After the first good effect of the quinia treatment, none other was used during the epidemic by either of the physicians by whom the cases were treated, and the very happy solution of the symptoms under its use was as satisfactory as could have been desired. Nothing particularly was done to relieve the

yellowness of the conjunctiva which sometimes continued in a greater or less degree after the patients had returned to their usual labours. Alkaline remedies were sometimes used with the antiperiodic towards the close of the treatment, when there was any unusual acid eructation. In estimating the nervous excitability which was noticed among the cases as they were seen here, account must be taken of the unusual exaltation of nervous sensibility in all complaints of these tropical countries, and which often is one of the most troublesome attendants on symptoms of diseased action.

Since the disappearance in an epidemic form of this complaint, which may be characterized as a malarial colic, two cases have occurred in December, at different times; and another case, about the last of the year, came here sick, from an Indian village some two hundred miles down the river, with exactly the same symptoms, and was cured under the same treatment.

The commanding officer at the Peruvian frontier, below the village above referred to, had lost two Indians during November, and his description of the cases led me to suppose that there were others of the same type. Not being supplied with either medicines or a physician, the treatment was merely that by domestic remedies.

I am informed here by the government physician, an intelligent Ecuadorian, that violent forms of colic are very common here, especially among the Indian population, but that he had not before seen any case which was not relieved permanently in the course of twenty hours by the use of anodynes and antispasmodics. These colics can be traced to great imprudence on the part of the ignorant, who eat enormous quantities of plantains or half-ripe fruits, and expose themselves to the action of rains, or bathe imprudently. It may be mentioned that in the cases occurring of the epidemic, some of the patients in vomiting threw up worms. The presence of these parasites in the alimentary canal may be considered here as one of the most universal facts of the condition of the people, even among the grown population, and among the children it is sometimes astonishing what numbers of these animals will pass off by the use of proper medicines. Among the adults they rarely seem to trouble the person; but among the young they cause convulsions and other of the ordinary derangements of health. The cause of the presence of these creatures may be found in the poor diet and carelessness of the population. In some cases of colics with icteroid features, I have been led to imagine that possibly these animals might have made their way into the ducts leading into the duodenum from the liver. Unfortunately, the very superstitious nature of the natives and half-breeds of this region has prevented the medical men of this place as yet to make post-mortem examinations, which has rendered the diagnosis and treatment of the disease somewhat unsatisfactory; and the authorities, very naturally, are unwilling to excite the fears or distrust of the natives, who are largely employed as labourers,

as a panic might deprive the village of the presence of the only labouring class, who would run off to their forests on very slight suspicions of evil.

From what I have been able to learn on the subject, there had been, during the latter part of the last year (1871), a greater prevalence of disease of a malarial character than has been heretofore known on the Upper Amazon, though the accounts given have been of such a vague and inaccurate nature, that it is difficult to arrive at any conclusion as regards the type of disease said to have existed. In only one instance was anything definite learned. At an Indian village, some two hundred miles above here, immediately on the river, a severe form of bilious fever seems to have prevailed about July last, which, from the panic it produced, caused the desertion of the place. It had a population of some 250 Indians, with one white Peruvian as governor. His wife, also a white Peruvian, came to Iquitos for treatment, herself being then ill with a severe attack of the disorder of some three weeks' standing. From her I learned, that, when the disease first appeared there, the natives, supposing it to be ordinary intermittent fever, with which they were more or less familiar, applied their native herbs in common use, and, finding them useless, and that several died after some eight or ten days' sickness, were seized with a panic, and deserted the place completely, leaving the sick to their fate. In the case of the lady herself, the symptoms seemed to be, as far as I could learn, those of a bilious remittent fever, in which there was conjoined a dysenteric complication. When she came here she was excessively prostrated, having febrile accessions towards evening, and on several parts of the body there were troublesome boils which had been reappearing and healing for some two weeks. I was told that in some of the cases there was cough with bloody sputa, and a delirium which early supervened, and which led me to think of typhoid pneumonia. The lady regained her health under the long use of quinia and ferruginous tonics, though convalescence was tedious, and for a long time there was a great sense of prostration about the stomach, and a feeling of burning, with want of appetite.

This epidemic on the Marañon (or Peruvian Amazon) seems, so far as I can learn, to be altogether exceptional, and the exemption from malarial fevers on the borders of the "King of the Rivers" is truly remarkable, though one will have to take into account, in judging of this matter, the hitherto remoteness or sparsely settled nature of the country, the unreliability of the information received, arising from the ignorance of those living along the borders of the streams, or the mistakes which unprofessional travellers might make on this subject. Still, with all this reserve, the margin of the upper Amazon presents itself in most favourable contrast with other tropical river bottoms, and those lying adjacent to such warm latitudes.

It is hardly necessary to say that Grisolle's opinion about the origin of the series of symptoms such as were observed in the epidemic in Iquitos

could have no possible relation with the presence of lead in any form whatever, the treatment itself also affording sufficient additional proof, probably, if any were wanting. I was, as the result of my experience, led to believe the epidemic one of a malarial disorder, which seated itself possibly in the solar plexus, and essentially of a neuralgic character arising from the "miasmes palustres." Why the malarial emanations should show themselves in such a "questionable shape" I do not pretend to say.

IQUITOS, Peru, Jan. 16, 1872.

ART. VIII.—*Remarks on the Use of a Rectilinear Écraseur, in the Removal of Hemorrhoids, the Cervix Uteri, Penis, Tongue, Nævi, Folds of the Vagina, &c.* By J. C. NOTT, M.D., of New York. (With a wood-cut.)

AT the request of Messrs. Tiemann & Co., my instrument-makers, I, some months ago, published a brief sketch of this instrument in the *New York Medical Record*, and now at the suggestion of Prof. J. T. Gilmore, who sends me his notes of some interesting cases operated on by himself, I am induced to place it somewhat more prominently before the profession, under the conviction that the instrument is one of practical utility and susceptible of extensive application.

The following note, dated Mobile, 17th February, 1872, from Professor Gilmore, one of the best surgeons I know at the South, will speak for itself:—

"J. C. Nott, M.D., *Dear Doctor*: I send you a report of several cases operated on with your improved *écraseur*. I have used it in all the cases of hemorrhoids I have been called on to treat, that required operative interference. I have the records of four cases, but as they possess no special interest in addition to what you have already published, I omit any mention of them. The notes of the cases inclosed were carefully kept and the reports drawn up by Dr. Rhett Goode. I have some half a dozen times removed the penis with Chassaignac's *écraseur*, and have seen it followed by troublesome hemorrhage. The two cases operated upon with your instrument *did not bleed a drop*.

"For the removal of the *cervix uteri*, in the case in which I used it, it could not be excelled. I, however, operated on another, one of cauliflower excrescence, on Friday last, in which it was not large enough. The clamp being too short, it would not embrace the whole cervix, which was enlarged; and, the woman being obese and the uterus high up, I found it impossible to apply it. I therefore used Chassaignac's instrument.

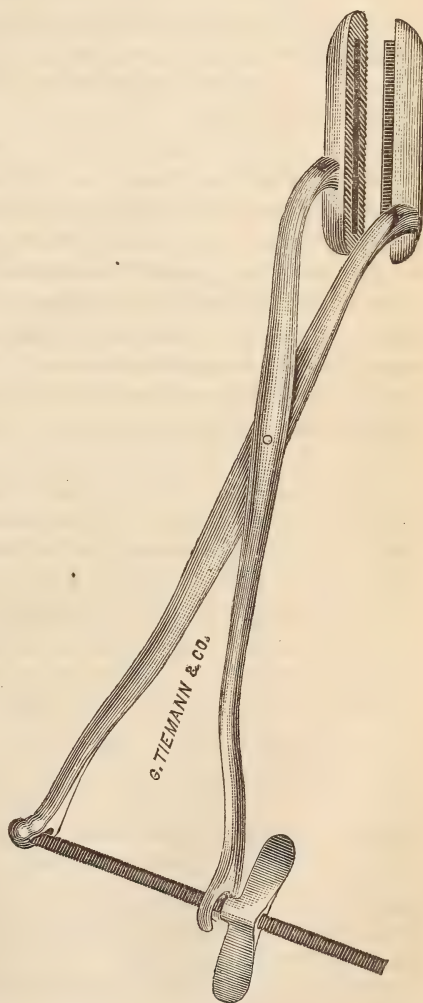
"In sound tissues, I think your instrument a reliable safeguard against hemorrhage. In all cases in which I have employed it, *the tissues were simply crushed*, leaving them for division by knife or scissors, or the application of ligature.

"Were I in your place I would publish the instrument in the *American Journal of Medical Sciences*."

The *écraseur linière* of Chassaignac, long and favourably known to the profession, though extremely valuable in appropriate cases, is not free from objections. 1st. It is occasionally followed by serious hemorrhage, particularly in internal piles, which is embarrassing and dangerous. 2d. From the dragging action of its chain or wire, it is apt to draw in more tissue than is desirable. For this reason it has several times, in the hands of experienced operators, while removing the cervix uteri, made openings into the peritoneal cavity or bladder. And in operating on hemorrhoids, by drawing in too much tissue, it has been followed by stricture of rectum. 3d. It is very tedious in its operation, particularly where several hemorrhoids are to be operated on in succession. 4th. Several sizes and shapes of this instrument are required for different cases, all of which may be easily managed by one *rectilinear* instrument. 5th. Chassaignac's instrument is only applicable to *circular* masses of tissue, whereas my instrument will grasp and remove, with the precision of a pair of scissors, any strip of tissue large or small, which is a great advantage, particularly in the operations of elytrorrhaphy and hemorrhoids.

These objections led me, two years ago, to the invention of my instrument, and the experience of other surgeons, as well as my own, justify me in saying that they are to a great extent, if not wholly, overcome by the *rectilinear écraseur*. It is applicable, I believe, to all cases where the *écraseur* of Chassaignac can be used, except in intra-uterine polypi, and the neck of the uterus in very deep or narrow vaginæ. In such cases there is not room for manipulating.

A glance at the accompanying cut will show that this *écraseur* has two *parallel* blades, coming together in a right line, like a clamp. The blades are about



three inches long, but may be made of any desired length. One has a fenestra running its whole length; the other presents a thin blade, about a line in thickness, with small saw-like teeth on its edge, and it is so constructed as to pass into and fill up pretty closely the fenestra when the clamp is closed.

The part to be operated upon is seized with a volsella, or forceps, and put gently on the stretch; the clamp is then applied at the point indicated; it is next screwed down firmly, as far as the screw will press the blades. A part of the tissues are driven by the saw blade deep into the fenestra, and the shoulders or ledges, projecting from the sides of this blade, compress and crush the tissues for an additional line on each side—thus guarding more effectually against the danger of bleeding.

This instrument does not, like that of Chassaignac, *sever* the tissues, but, after crushing them down to a bloodless, flattened, translucent, insensible pulp, in the track of the clamp, leaves the part to be treated in one of two ways, according to circumstances. 1. All the strangulated mass projecting above the clamp may be shaved off closely; or, 2d. The clamp may be removed after compression, a ligature be tightly tied in the sulcus formed by it, and the part projecting beyond the ligature then cut away.

The tissues are so compressed that a very small, deadened pedicle is left for ligature. The pedicle, for example, of a large internal hemorrhoid, when tightly tied, will not be larger than a goose quill. In operating with the *écraseur* of Chassaignac, the part is entirely cut through, consequently leaving a very thin margin of crushed tissue to protect against bleeding, while the rectilinear *écraseur* leaves a much broader mass of mangled tissue to rely upon.

There is a practical point in connection with the use of the ligature, in conjunction with my *écraseur*, which must be decided to a great extent by the judgment of the operator. In general terms I may say that in tissues with a good deal of resistance under this instrument (such as the cervix uteri, penis, folds of vagina, &c.) no ligature is required after it, to prevent bleeding. On the contrary, the opposing surfaces are so closely approximated, and so entangled or dovetailed together, that they *do not separate when the clamp is removed, or require retentive stitches.*

The case, however, is different, I think, with regard to *internal piles*. These are composed of peculiarly soft, vascular, hemorrhagic tissues, which pour out blood on the slightest provocation. In operating, therefore, upon internal piles, I first apply the clamp firmly for a minute or two—then remove it—apply a ligature in its track, and snip off the projecting mass. The sensibility of the nerves is so deadened by the crushing, that a ligature gives little or no pain, and makes surety doubly sure without being liable to the slightest objection. If my instrument were kept applied as long as that of Chassaignac's usually is, it would afford at least quite as much security as the latter, but it is unwise to trust either in this position.

In the removal of *external* piles, on the contrary, those lying upon and without the sphincter, I crush, and snip off unhesitatingly, without ligature.

My experience, as yet, is very limited in the application of the *rectilinear écraseur* to removal of portions of the vagina in operations for procidentia, cystocele, rectocele, &c., but I am greatly mistaken if this will not prove to be its more important use. The operation of elytrorrhaphy is a difficult one, and none but specialists can do it with encouraging results, by the delicate clipping and stitching processes of Sims and Emmet. The operation must be simplified, to place it within the reach of the profession generally. In two cases, in which I have removed portions of the vagina with my *écraseur*, I was quite unprepared for the results which followed. One of these cases was operated on in St. Mary's Hospital, in Brooklyn, through the kindness of Dr. John Byrne, chief surgeon of the hospital, in his presence, as well as that of Dr. Sims and other medical gentlemen.

The folds of the vagina in each of these cases were seized by the *écraseur*, which was then firmly screwed down; the projecting parts of the folds were cut away with scissors, and the clamp removed to make way for interrupted silver stitches; to the surprise of us all, *the tissues did not separate when the clamp was taken off*, but, on the contrary, were so firmly glued together that no gaping occurred; no stitches were applied, and immediate union followed without suppuration. It will be seen below that the same result followed in the case of amputation of the cervix uteri by Dr. Gilmore with my *écraseur*. In none of these cases was there the slightest hemorrhage, and such is the usual effect of this instrument. Now if these facts are confirmed by further experience, it is clear that this instrument enables us to greatly simplify many vaginal operations.

The only operations for hemorrhoids now much in vogue are: 1st. The ligature with or without division of the lower tegumentary margin of the tumour. 2d. The clamp with actual cautery. 3d. Galvano-cautery.

The two latter are tedious, require troublesome preparation, and are more or less expensive, as well as alarming to the patient. The ordinary operation by ligature, as recommended in our books, requires about the same time as the rectilinear *écraseur*, is more painful, and the cure is more tedious. Where the pile is first crushed, the sensibility is much less, and the ligature cuts through in shorter time.

I will now give a few typical cases to illustrate more fully what I have said. After having operated on a good many cases previously, about a year ago, I thought the following one would put my instrument fairly to the test. Having decided to operate, I invited to be present Drs. Ed. L. Keyes, Fred. A. Castle, Leroy M. Yale, and B. W. Dudley.

CASE I.—Mr. S., aged 40, had suffered greatly for many years with hemorrhoids, which always protruded largely at stool, and often bled copiously. He was feeble, emaciated, anæmic, dyspeptic, no appetite, nervous system greatly deranged, and seemed the mere wreck of a once good con-

stitution. An enema was given preparatory to the operation, which brought out a mass almost as large as the fist, on which were counted five tumours, entirely within the sphincter, varying in size from a nutmeg to a large walnut, and completely encircling the gut. The patient was then put under the influence of ether; but I may remark in passing, that I have often operated on *internal* piles by the *écraseur* with very little pain, for if screwed down quickly, the nerves are crushed and deadened.

Everything being in readiness, one of the piles was seized with a volsella and drawn gently out; the clamp was then quickly applied to its base, and screwed down tightly; after a minute or two the clamp was removed, while the pile was still held by the hooks, and a ligature applied tightly; all the pile beyond the ligature was then snipped off, except just enough to retain the ligature. The remaining four tumours were successively treated in the same way, and the whole operation did not consume fifteen minutes. The protruding part was returned into the gut. After the effect of the ether passed off, the patient complained of no pain—merely a sensation of soreness; but, in order to insure rest, I gave morphia hypodermically. I had never seen so little suffering from an operation of this kind, nor so rapid and satisfactory a recovery as followed.

The piles in this case were so numerous, large, and vascular, and the patient had been so drained of blood by repeated hemorrhages, that it would have been folly to trust the *écraseur*, without ligature, when so far from being objectionable, it could only hasten the cure, by insuring against hemorrhage, and by causing the pedicle to drop off sooner. If the part be well crushed by the *écraseur*, the ligature gives little pain, and reduces the pedicle to its minimum.

CASE II.—Between two and three months ago, a case even worse than the above came under my charge. The subject was a lady 60 years old, who had been annoyed by hemorrhoids for thirty years. She was the wife of a prominent homœopathic physician, who did not believe in surgical interference in such cases. She was naturally of extremely nervous temperament, and her malady had worn upon her until she was a pitiable wreck. For many years she had not had a stool without protrusion of the piles, accompanied by more or less pain and difficulty in returning the mass; she had exhausting hemorrhages, was pallid, excessively nervous and hysterical, dyspeptic, and without appetite. She had been always able to push up the protruded mass after stool (though often with much difficulty), until five days before my first visit.

On examination, I found an apparently desperate condition, both local and constitutional. She was so nervous and so sensitive to the touch, that she shrunk from every attempt at local treatment, and could not take opiates. The protruding mass was about the size of a small orange, and almost black from strangulation. After temporizing two days with puncturing, emollient, anodyne, and astringent applications, it was evident that the whole mass would slough, if allowed to remain *in situ*. I accordingly put her under ether, and with much difficulty succeeded in pushing it up.

For a month, her suffering was intense, from the inflamed and irritable condition of the entire circumference of the rectum. She was obliged to have a stool once in three or four days, which had to be obtained with great difficulty by enemata, her stomach not retaining laxatives of any

kind. Whenever the stool took place, the hemorrhoidal mass was forced out, and ether had again to be given for its reduction.

Matters went on in this way for the month, and I saw she must die from the wear and tear, if allowed to continue. Her stomach would not retain food, and she was becoming more feeble every day.

Having made up my mind to the necessity of a surgical operation, in spite of the unpromising symptoms, I requested Dr. Wm. H. Van Buren to see her in consultation. He at once agreed with me as to the propriety of operating, and the operation was accordingly done, with the assistance of Dr. Van Buren, and that of Dr. J. Marion Sims, and Dr. Geo. B. Fowler.

An enema was given, which brought a mass down about the size of a large lemon; there were three internal tumours, the largest of which was fully two and a half inches long, nodulated, hard as a uterine fibroid, and covered with superficial ulcers. She was then fully anæsthetized. Dr. Van Buren seized the largest tumour with a volsella, and held it while I adjusted my *écraseur* on its base, and screwed it quickly and firmly down. After two or three minutes, the clamp was removed, a ligature tied firmly around the base in the sulcus formed by the instrument, and the whole mass cut away with scissors, leaving only enough to prevent the ligature from slipping. The other two tumours were removed in succession in the same way; the protruding gut then returned within the anus, and morphia given hypodermically, though she does not bear opium well.

This case was the most aggravated one I think it has ever been my lot to treat, and from the condition of the rectum and nervous system, it is not a matter of wonder that a good deal of suffering should continue for some days. I saw no evidence that the crushing and tying the piles added anything to the suffering, which was rather less than it had been previously. On the second day she was evidently less uncomfortable, began to take nourishment, and got more sleep. On the fifth day she had a copious moulded evacuation without any protrusion of the bowel, and with less pain than she had had for many weeks. The progress of the case since has been steady and satisfactory. She now, at the end of six weeks, is fairly convalescent, sleeps well, eats well, and has evacuations without trouble. The only drawback is from two small external piles, which ulcerated, and which it was thought most prudent to leave untouched at the time of the operation, as we did not wish to risk any additional shock to the constitution in her nervous, prostrated condition. She is quite delighted with her present condition and prospect of future comfort.

I could add other cases from my own practice and that of others if there was any object in doing so. Dr. T. Gaillard Thomas informed me that he had used the *rectilinear écraseur* with much satisfaction; and it has been tested by Dr. J. Marion Sims, Dr. B. W. Dudley, and others.

Professor J. T. Gilmore, of Mobile, has kindly sent me his notes of the following cases, operated on by himself; but, having already consumed more space than I anticipated, I must be content with abstracts.

CASE III.—D., 24 years old, patient in the City Hospital—abscess of testicle which completely destroyed the glandular structure, was opened—threw out a fungous growth and became completely everted. There was no remedy left but extirpation of the organ. After separating the gland from the surrounding structures and isolating the cord, the latter was

crushed with Dr. Nott's *écraseur*. As a means of precaution a ligature was applied in the track of the instrument after its removal. The cord was then divided with a scalpel near the ligature. There was no hemorrhage, and the patient made a speedy recovery. The ligature came away on the fifth day.

CASE IV. *Amputation of Cervix Uteri*.—In the last days of November I was invited by Dr. Sherrard to operate on a patient of his, M. N. (col.), aged 29 years. She had never borne any children, although she had been married for ten years and had menstruated regularly. On examination, that peculiar condition of the uterus described by Huguier as hypertrophic elongation of the cervix, to which he exclusively ascribes complete prolapse, was found. In the standing posture the cervix hung out of the vulva more than an inch. The patient, under chloroform, was placed on her left side, Sim's favourite position for uterine operations. Dr. Nott's rectilinear *écraseur* was applied, grasping the cervix evenly close to the vaginal insertion. The clamp was rapidly screwed down and allowed to remain for some five minutes, and, before removing the clamp, with a pair of scissors I removed the strangulated cervix as close to the clamp as I could. *On removing the instrument there was not a drop of blood*, and the crushed tissues were not cut at any point. The woman remained in her bed for five days, and then in her room for ten days longer. Dr. Sherrard informed me that *the approximated mucous membrane covering the stump did not subsequently separate, but healed by immediate union. At every part the covering was more uniformly and evenly applied than it was possible to have done it by sutures.*

P. S. I have just examined the cervix, and find the os well preserved and its vaginal surface free from cicatricial formation. The vaginal mucous membrane has accurately covered it.

CASE V. *Amputation of the Penis with Dr. Nott's Rectilinear Écraseur*.—D., City Hospital, age 103 years. Epithelial cancer of glans penis. The patient having been put slightly under the influence of sulphuric ether, the penis was removed within an inch of its attachment to the pubes. The diseased mass and that part of the penis external to the instrument was removed with a knife. The *écraseur* was allowed to remain for a short while, so as to thoroughly crush all of the vessels. Upon its removal there was not a particle of hemorrhage. *No ligature was applied.*

CASE VI. *Epithelial Cancer of the Penis; Amputated with Dr. Nott's Rectilinear Écraseur*.—M. D. (col.), age 50 years, from Mississippi. No hemorrhage. The patient returned to his home one week after the operation.

This instrument has been applied satisfactorily to the severance of the adhesive bands in the operation of ovariectomy, and, although it has never been tested on the pedicle of an ovarian tumour, I cannot doubt the safety of the principle in such cases. In large pedicles it would require a larger and stronger instrument, but one could be made, I have no doubt, that would divide all the soft parts (in an amputation) below the knee, without the loss of an ounce of blood. I amputated a finger with the one I use, through bone and all, leaving the flaps firmly glued together and requiring

no ligature or stitch. There was not a drop of blood. The stump was round and smooth, looking like a cut stump in the last stage of healing.

After I had conceived the idea of a *rectilinear écraseur*, and had one manufactured by Messrs. Tiemann & Co., I exhibited it to my friend, Prof. Isaac E. Taylor, under the conviction that the idea was peculiar to myself. To my surprise, he brought forward one he had invented twelve years previously, identical in principle, though differing in shape and some minutiae of construction. His was *curvi-linear*, mine *recti-linear*, &c. His instrument, though invented twelve years previously, was never published that I am aware of, is not exhibited for sale by the instrument-makers of New York, and having been a resident of this city but four years, it is by no means strange that I never heard of Dr. Taylor's instrument until it was taken from a private drawer in his office and shown to me. His instrument, I believe, was particularly designed with a view to removal of uterine growths. I think, though perfect in principle, it is of inconvenient shape, and applicable in few cases in which an *écraseur* can be used. It is to be regretted that the doctor did not push his idea through to its legitimate results.

ART. IX.—*Two Cases of Rare Disease of the Tongue.*

By J. H. POOLEY, M.D., of Yonkers, N. Y.

CASE I. *Abscess of the Tongue.*—February 24, 1869, I was called to see a little girl seven years old. Two days before my visit the child first complained of pain in eating and difficulty of swallowing, and the mother noticed a swelling of her tongue. The patient appeared to be pretty well, there was no fever, no excitement of pulse, she looked a little paler than usual, and seemed rather weak. Upon examining the tongue it was found slightly coated in the middle, and red along the edges; about the middle of the left lateral lobe of the organ there was a smooth ovoid swelling, about the size of a pigeon's egg, shining, as if denuded of epithelium, intensely red, with a few little yellowish-white dots here and there upon its surface; it was but slightly tender on pressure, and gave an obscure feeling of fluctuation. I proposed to puncture it, but the child objected very strongly, and as the case was not urgent I did not insist. The next day it was about the same, it gave the child very little inconvenience except when she attempted to eat. Her diet was confined to liquids and slops. The following day the mother informed me that the swelling had burst early in the morning, and had discharged a tablespoonful of matter, it was very much reduced in size, and a little pus was seen oozing from a point on its surface, in a day or two more it entirely disappeared, and the child was quite well.

Erichsen says: "Abscess of the tongue, though rare, occasionally occurs. A boy was brought to me sometime ago with an elastic fluctuating tumour of slow growth and about the size of a small plum, situated deeply in the

centre of the tongue; on puncturing it, about half an ounce of healthy pus was let out, after which the cyst speedily closed." Other similar cases may be found scattered through medical literature; several are referred to in *Holmes's Surgery*.

CASE II. *Fibrous Tumour of the Tongue.*—August 8, 1870, I was asked by her family physician to see Miss C., æt. 23, on account of a tumour, as he stated, of the larynx, which was interfering with respiration and deglutition, and giving rise from time to time to serious hemorrhages. I found her quite pale and anæmic, but otherwise, with the exception of her local trouble, in good health. She stated that about a year before she had begun to notice some obstruction in her throat, to which at first she paid but little attention, as she regarded it as the result of an ordinary sore throat, but it steadily grew worse, until she was compelled to call in a homœopathic practitioner, under whose treatment she had been for some months. A few days before my being asked to see her he had discovered for the first time the existence of a tumour in her throat.

Upon depressing the tongue in front of a good light, I could plainly see projecting above the base of the tongue the top of a round, smooth tumour apparently about the size of a pigeon's egg. Upon passing my finger into the mouth the tumour felt very firm, hard, and incompressible, and was plainly made out to be situated at the base of the tongue, in part at least, for it was situated so far back that, though I introduced two fingers, I could not fully circumscribe its base or peduncle, which seemed to be quite large, and I feared might in part involve the edge of the larynx. The tumour was not sessile, but had a distinct though broad pedicle. It interfered seriously with deglutition, so that for some time the patient had not been able to swallow solid food, but it was not painful and did not impede respiration to any important extent, or interfere with speech; there had been three somewhat severe bleedings from it. My protracted and somewhat rough examination did not cause any hemorrhage from it. I prescribed iron, and a gargle of bromide of potassium, from its reputed anæsthetic effect upon the fauces, and advised her to go to New York to have a laryngoscopic examination made of the growth. She promised to do so as soon as she should have somewhat recovered her strength; but while waiting for this she was attacked with a very severe hemorrhage from the tumour, to the extent of producing syncope. No accurate idea could be found of the amount of blood lost, as a good deal of it was received on towels and cloths, though the friends said that for several minutes it poured in a stream from her mouth. The bleeding was stopped by the local application of liq. ferri persulph. of full strength, and she was advised to have the tumour removed at once, but decided to put it off, as she thought she was too weak to bear it. Hemorrhages recurred from time to time at intervals of a few days, or a week, which were arrested with the persulphate, and the advice to have the tumour removed repeated, but still she kept putting it off. On one occasion I went with my instruments, prepared to operate, but again she declined, saying she was too weak.

At last, the intervals between the attacks of bleeding becoming shorter and shorter, and a fatal termination being threatened, she consented, and on Sept. 4th, ably assisted by Dr. J. Foster Jenkins, I proceeded to operate. Ligature was hardly to be thought of, knife or scissors I was afraid to use, even if I could have reached the base of the tumour with them, which, however, was impossible.

I had, therefore, provided myself with a wire *écraseur*, with a suitable curve at its extremity, and after several trials I succeeded in snaring the tumour in the wire loop, and pushing it down as far as accessible with my finger, for most of it was out of sight and reach, I began slowly to tighten; but the base or pedicle was so unexpectedly broad and hard that the wire broke, and as it broke near the loop, the instrument had to be removed and a new wire adjusted. Upon tightening again, after a few turns this second wire broke, fortunately near the shank, it was spliced, and we proceeded; it broke again; the instrument was now removed again and a thicker wire rope, double the thickness of the other two fitted to it. This bore the strain very well for awhile, but at last it broke also, and had to be spliced. This happened several times, till at last just as we were at our wits' end, the tumour was cut through. This operation was performed without anæsthesia, with the patient sitting in a low chair. She nearly fainted several times, was constantly interrupting progress by threatening suffocation, and the friends, discouraged by our frequent failures and her alarming appearance, could hardly be persuaded to persevere to the end. The operation lasted over an hour, and was altogether the most difficult and perplexing that ever fell to my lot. Never did I experience a greater feeling of relief than when the tumour was at last detached and hooked out of the patient's mouth. One source of failure was in the faulty construction of my instrument, the edges of the slit through which the wire loop emerged not being sufficiently smooth and rounded, but when the wire was tightened against them wearing them through, and thus causing at least two of the breakages. This is a point I should carefully look to in a future case of a similar kind, and I think it would be well, too, to be provided with a second instrument ready armed, which would save time in case of breaking the wire and being obliged to apply another one.

The operation was unaccompanied by a single drop of bleeding, and none followed afterwards. At its conclusion the patient was in an extremely exhausted condition. She was put to bed, stimulants administered, and under proper feeding and tonics she made an astonishingly quick recovery, and remains perfectly well at the present time.

The tumour was as large as a bantam's egg, perfectly spherical in form, with a pedicle an inch in diameter, had several stellate cracks or fissures extending through the mucous membrane by which it was covered, which were undoubtedly the source of the repeated hemorrhages; in structure it was a firm fibroid, and resembled accurately, as it did also in its symptoms, the well-known fibroid polyp of the uterus.

Remarks.—Fibrous tumours of the tongue must be considered as very rare, and all the cases that I have been able to find recorded have occurred on the dorsum or anterior parts of the organ. I, therefore, regard this case, with regard to its situation at least, as *unique*.

In Holmes's *System of Surgery* fibrous tumours of the tongue are not noticed, and in the great majority of text-books and works on surgery, both old and new, no mention is made of any such affection. Under the head of fibro-cellular tumours Mr. Paget has the following:—

“A fifth is an oval bilobed tumour, about half an inch in diameter, which I removed from a young man's tongue, in the very substance of which, near its apex, it had been growing for three years. It was firmer than most of the

others, yet succulent, and formed an obscurely filamentous tissue, abundantly nucleated."—*Surgical Pathology*, p. 390.

In Cooper's *Surgical Dictionary*, under the article Tongue, Diseases of, there is an account of a circumscribed tumour of the middle of the tongue in a young man, but the account is so short and meagre that no opinion can be formed of its nature. Brodie (*Clinical Lectures on Surgery*, p. 151) speaks of a tumour of the tongue which was cured by the administration of tinct. iodini, but as he says *he* can offer no opinion as to its nature, and gives but a short account of it, we may be excused for not having any to offer.

Gross (*System of Surgery*, vol. II. p. 470) says:—

"Tumours of a fibrous or fibro-cellular structure are sometimes found in the tongue, either imbedded in its substance or attached to its surface. They are generally of a spherical or ovoidal form, hard and firm in their consistence, free from pain, and of a tardy, painless development. When they spring from the surface of the organ, they usually present a peculiar pendulous, polypoid appearance, their connection being effected by a narrow, slender pedicle. The fibrous tumour of the tongue is occasionally congenital."

This is all, and is the best account of the disease that I can find.

In the *Boston Med. and Surg. Journal*, of 1855, there is an account by Dr. A. Waterhouse, of Exeter, Maine, of the removal of a fibrous tumour of the tongue. The account is so interesting that I transcribe it entire.

"Wm. Canney, of Exeter, æt. 16 years, in good general health, came to me, with his father, wishing my advice in respect to a tumour situated on his tongue. The tumour was first noticed about three years previous, then of small size, but increasing gradually since, until the time of my seeing it, when, from its size, it caused him great inconvenience. His face was somewhat enlarged on the right side, in consequence of the enlargement of the buccal cavity to accommodate itself to the slow yet steady growth within. On examining the tongue I found a tumour of considerable size situated on the right side of its upper surface, at the same time inclined to the side, so as to push the substance of the organ to the left, and compress it to very narrow limits. The tumour was of considerable firmness, somewhat elastic, and very well defined anteriorly, at the distance of an inch from the extremity of the tongue, when the organ was in a state of rest, and not appearing to implicate its structure; but posteriorly it seemed to be combined with the substance of the tongue and not so well defined. Injected vessels of large size were running over its posterior surface and extending along its borders; otherwise the skin appeared to be healthy, though much stretched. It had caused him no pain, but within a few months there had been some soreness at its upper part. Different opinions had been expressed by physicians who had previously examined the case, relative to its character and probable termination.

"After a careful examination I diagnosed a fibrous tumour and prescribed removal, as the only means of relieving him from such a barrier to speech and deglutition, and also from the inevitable consequences should it thus be allowed to remain.

"Accordingly, on Jan. 23, 1854, chloroform having been administered, I proceeded to operate by first passing a strong ligature through the end of the tongue to secure its movements; I then directed an assistant to draw the tongue forwards and to the left, thereby bringing the tumour as far toward me as practicable, and plunging into it a hook, I made a semilunar incision along its side, and another along its superior border, including between the two all the integuments, except what was considered sufficient to close the wound. The anterior portion was easily separated from the parts beneath; but posteriorly

it was found to involve the substance of the tongue, so that I was obliged to carry the dissection deeply into the organ, in doing which the lingual artery was divided, and sprung furiously. The tumour was immediately removed, and the artery seized with a forceps. A ligature was applied and knotted by means of a thumb forceps in each hand; an operation obviously attended with some difficulty from the situation of the vessel, but which I preferred to other methods usually resorted to under like circumstances. After the hemorrhage had been arrested, the wound was cleansed and brought together by three points of interrupted suture, and the operation finished; the whole time occupied being only a few minutes. The wound healed kindly, so that in fifteen days after the operation he was able to attend his school and read aloud tolerably well. The tumour after removal was of an ovoid shape, two and a half inches in length, one and three-quarters in breadth, and weighed twenty-two pennyweights. Microscopic examination proved it to be of a fibrous structure, involving but not invading the muscles with which it came in contact.

"Slight traces of fat were found in its central portion, where it was of a brownish color, but nothing malignant could be detected about it."

The cure proved permanent.

In conclusion, I will just mention in addition to these cases of disease of the tongue, an example of congenital deformity of this organ which came under my observation Nov. 15, 1869. It was in a female infant, in whom the tongue was cleft or bifid at its end for about one inch, and had beside on its left side a large depression or sulcus at nearly the middle. The child was the subject of other deformities, and a full report of the case may be found in the *New York Med. Gazette*, April 30, 1870.

ART. X.—*Cases of Ovariectomy.* By WASHINGTON L. ATLEE, M.D., of Philadelphia. (Reported by J. EWING MEARS, M.D., of Phila.)

CASE 230. *Unilocular Ovarian Tumour; Pelvic and Intestinal Adhesions; Incision four inches long; Recovery.*—April 19, 1866, Mrs. M. C., of the vicinity of Princeton, N. J., consulted Dr. Atlee. She was 37 years old, and first menstruated at the age of sixteen, and was irregular until the age of twenty, having intervals sometimes of six, and at others of twelve months. She was married October, 1858, but never conceived. After the age of twenty menstruation became more regular, and after marriage more profuse and more frequent, occurring every two or three weeks. Her health has always been delicate, and she suffers from pain in the head, in the groins, and the left side. Has always had a poor appetite.

She varies in size, and for the last two years she has never been smaller than she is now, but often has been much larger. She, however, is as large as a woman at the full period of gestation. The abdominal tumour is uniform in shape and globular, elastic, semi-fluctuating, free from nodules and ridges, and quite smooth. The percussion sound is resonant in the upper portion of the abdomen, and dull elsewhere. The uterus is displaced to the right side of the pelvic cavity, and the sound enters it four and a half inches, ascending about three inches above the pubes, so that its end can be felt to the right of the linea alba.

Diagnosis.—A unilocular ovarian tumour, or a cyst of the broad ligament.

December 29, 1868, Dr. Atlee tapped the patient, removing twenty-three pints of very dark chocolate-coloured or deep-brown fluid, which looked almost black in the tub, and which coagulated partially by heat. After tapping, the *diagnosis* was unilocular ovarian tumour.

May 19, 1870, Mrs. C. called to see Dr. Atlee, and stated that for nearly a year after the tapping, she had remained free from any accumulation, before she began to fill again. She now, however, is as large as at the time she was tapped, and has decided upon ovariectomy.

September 21, 1870, Dr. Atlee visited her residence for the purpose of removing the tumor. Drs. Wikoff, Bartine, and Schenk, of Princeton; Professor Blaney, of Rush Medical College, Chicago; Dr. Barron, of New York city; and Dr. J. Ewing Mears, of Philadelphia, were present.

The operation was performed in the usual manner, the adhesions being separated, and the bleeding vessels secured by ligature. The tumour was composed of one large cyst, with a small multilocular mass in its wall, and involved the right ovary. The recovery of the patient was tedious, but in every respect satisfactory.

CASE 231. *Multilocular Ovarian Tumour; tapped six times; Inveterate Parietal Adhesions; Intestinal and Vesical Adhesions; Incision six inches long; Estimated Weight of Tumor, 120 lbs.; death in twenty-eight hours.*—August 10, 1870, Dr. Atlee visited Miss S. S. at Westport, Connecticut, in consultation with Dr. G. B. Bouton. She was thirty-five years old, very much emaciated, and had been tapped five times, losing at one time the enormous quantity of twelve gallons. The fluid at the first tapping was transparent, but was opaque at the subsequent tapplings. After being tapped a very large solid mass could be seen and felt in the region of the liver. This mass was supposed by her physicians to be the liver in a state of hypertrophy, and adherent to the multilocular tumour so intimately as to render the removal of the tumour impracticable. She was last tapped about four months ago. The enlargement commenced about three years ago.

The abdomen is enormous. She measures round the waist thirty-six inches; round the umbilicus, fifty; from sternum to umbilicus, seventeen; from sternum to pubes, twenty-eight and a half; between the anterior superior spinous processes of the ilia, thirty-three and a half. The emaciation extreme, the pulse feeble and very frequent; tongue rather red; appetite pretty good, but digestion feeble; bowels irritable, and defecation prostrates her. Menstruation has been suspended for seventeen months.

The abdomen is very wide, somewhat irregular, and covered by a network of very dark-coloured veins; in some places the blood in the veins seems to be coagulated. A large cicatrix exists at the point of tapping below the umbilicus. There is no resonance on percussion, except over the left lumbar region. Fluctuation is distinct over the whole left side, extending to the central and lower portions of the abdomen; but there is no fluctuation over the right side. There is some fluctuation over the right lumbar region, indicating an additional small cyst there, which does not communicate with the large cyst in the left side. The whole right side is evidently occupied by a multilocular mass, while the left side contains one large cyst. The portion, supposed by her physicians to be the liver, is evidently a part of the multilocular mass itself. The lower extremities are

œdematous. The pelvis is free, the cervix uteri normal and thrown back. The sound enters the uterus about two and a half inches, and the organ appears to be movable.

Tapping was performed with a long, large trocar, removing about five gallons of a purulent-like looking fluid, with cholesterine floating on it, and partially coagulable by heat. When collected in the tub the fluid closely resembled soft soap, having the same mottled appearance. Before the canula was removed the multilocular masses were punctured, and a little fluid resembling the white of egg, and some blood, were evacuated. The abdomen had now subsided over the left side, but a prominent tumour occupied the region of the liver, which was visible along the whole right side.

Diagnosis.—A multilocular ovarian tumour.

As an operation offered her the only hope of relief, Dr. Atlee told her that she was entitled to the chances which it afforded her.

A specimen of the fluid was handed to Dr. Mears, who reported it ovarian in character.

October 5, 1870, ovariectomy was performed, Drs. Bouton of Westport, M. B. Pardee of South Norwalk, Samuel Syne, and J. W. Barbour, of Norwalk, being present.

The tumour was found to be multilocular, and involved the right ovary. The tumour and its fluid contents were estimated to weigh 120 lbs.

The patient bore the operation pretty well. No sickness of stomach occurred. The pulse, which was feeble before the operation, lost force, and was very weak when the patient was placed in bed.

She passed that day and night in tolerable comfort, but sank gradually next day, and died about 3 P.M.

Remarks by Dr. Atlee.—The above was one of those desperate cases which we place under class second, where the operation offers the only chance in warding off impending death. The patient had been greatly reduced by repeated attacks of peritonitis, following the tappings, and the functions of life were much impaired thereby, as well as by the immense bulk of the tumour. It was unfortunate that the operation was delayed until the tumour had developed to such an enormous size, had formed such inveterate adhesions, and had, through inflammation and other causes, overcome the vital stamina.

ART. XI.—*Report of Two Cases of Inversion of the Uterus, with Remarks and a Description of the Uterine Repositor.* By JAMES P. WHITE, M.D., Professor of Obstetrics in the Medical Department of the University of Buffalo. (Read before the Medical Society of the State of New York, February 6, 1872.)

THE *Eighth Case* of inversion of the uterus, which has been treated by me, occurred near Ithaca, Tompkins County, New York.

The following is an extract from a letter received from Dr. H. B. Chase, of Jacksonville, who was then in attendance upon the patient:—

"The case is as follows: Mrs. R., æt. 27 years, of a good constitution, was delivered on the morning of the 25th January, of her first child, after a tedious labour of eighteen hours, when her medical attendant discovered that the placenta was adherent. Severe hemorrhage came on when the doctor separated the placenta from the walls of the uterus and withdrew it with his hand. Immediately (so he says) he discovered a large solid tumour in the vagina, accompanied by still more profuse hemorrhage.

"Four days after the accident I was called to see the patient. On examination I found the uterus completely inverted. The os uteri could be felt at the superior extremity of the tumour. The uterus, at that time, hard and unyielding and filling the vagina. I made an effort to reduce it, but failed. I felt quite sure that reduction was impossible at that time. And now, doctor, the question I would ask is: Can anything be done to restore this poor woman to health and usefulness again?"

My reply to Dr. Chase's inquiry held out the hope that it could, by suitable manipulation, be restored. Accordingly, in compliance with an invitation contained in a subsequent letter, I visited the patient on the 27th of February, not quite five weeks after the accident.

I found her very exsanguine and feeble, constantly losing blood, and at times bleeding profusely. The uterus had not completed its involution, though it was nearly as small and firm as in the normal condition of the organ in the multipara in its unimpregnated state. The perineum had been lacerated during the labour, and the hand could be easily introduced into the vagina and up to the neck of the uterus. The inversion was found to be complete, although the uterus did not protrude beyond the vulva.

The bowels had been, by my direction, freely evacuated the same morning, and, after drawing off the urine, I proceeded to reposit the organ, in the presence of Drs. Chase, Lewis, White, and Carrington, and Mr. George Rightmire, medical student, who has furnished a partial report of the case in the *Buffalo Medical Journal* for April, 1871. Requesting one of the gentlemen to take charge of the anæsthetic, whilst two others were seated beside the bed, each holding in his lap a foot, supporting with one hand the knee upon his side and holding firmly the patient's hand upon the same side, with her hips brought to the edge of the bed, I placed myself upon my knees and commenced the operation. Carrying my right hand into the vagina, I seized the entire organ and manipulated and compressed it firmly for a short time, to expel the blood and render the tissue flexible. This pressure was continued, with the hand within the vagina, during the entire process. I now commenced pushing upon the fundus, with a large rectal bougie, alternating with the thumb and fingers of the left hand and thus put the vagina upon the stretch. This process, through the attachment of the vagina to the inverted uterus, pulled open the os and reflected it upon the neck. Thus it will be perceived, as I have heretofore described, the process of restoration was from neck to fundus. The fundus was at no time perceptibly dimpled or doubled in upon itself. By continuing this process steadily and gently, occasionally placing the fingers of the left hand over the hypogastrium and through the thin walls of the abdomen, inserting them into the opening os and making traction and pressure, I found the organ passing up through the neck and assuming its normal position. At the expiration of twenty-three minutes from the time of commencing the operation, the uterus was completely restored. The loss of blood was small, and the only noteworthy peculiarity in the

case was the doughy *feel* of the organ in this stage of involution. It did not possess the firmness of normal uterine tissue in the unimpregnated state, nor the muscular flexibility of the recently delivered organ; but had a doughy feel like an organ undergoing fatty degeneration. Indeed I am induced to suspect that, at this period after delivery, the uterus cannot be subjected to manipulations without danger of laceration, which would be perfectly safe at a later period, after complete involution had taken place. It is the only case which has fallen under my observation between the third and the eighth week, and the sensations occasioned by pressure and other manipulations were such as to excite apprehension lest the tissues would yield under the fingers.

The patient soon recovered from the effects of the anæsthetic, and I left her, a few hours after, sleeping comfortably under the influence of an anodyne. Since that time she has, under the care of her attending physician, Dr. Chase, gradually convalesced, and is now in "good health."

CASE IX.—The following history is taken from notes furnished by J. W. Stewart, M.D., the attending physician:—

"Mrs. E. A., of Port Dover, Canada, æt. 34, was delivered of her second child on the 7th of October, 1870. The case for the first seven days I had no personal observation of, but will give a brief history as I learned it from the patient herself and her friends who were attending her, the correctness of which I do not doubt.

"The labour was comparatively an easy one, lasting but three or four hours, and having no pains as usual for a few minutes after the birth of the child. The medical attendant, finding that the placenta was not expelled, made an examination, and said 'it was grown to the womb.' He caught hold of the cord, giving it two or three sharp jerks, and the after-birth came away. The patient, immediately after its expulsion, complained of violent and constant pain, and says she experienced a sensation as if 'all her insides had dropped down.' In a few minutes she began to sink, being bathed in cold perspiration, pulse running very rapidly. Her friends, being alarmed, asked the doctor what was the matter? He replied she was dying. After a time she rallied, but remained in excruciating agony up to the time I saw her—the eighth day after confinement. At my first visit I found her in the following condition: Tongue deeply furred; very irritable and feverish; pulse 155 to 170, very angular and weak; abdomen much swollen and so tender she could not bear the clothes to touch her. In a word, I found her labouring under a violent attack of metritis, the inflammatory action extending over the whole surface of the peritoneum. I learned that these symptoms had appeared three days previously, hourly growing more intense. I removed her bandage immediately, and applied turpentine stupes and warm fomentations, giving her large and repeated doses of opium.

"By my advice Dr. C. W. Coventer was called in the same evening and the next day. She described to us so accurately the symptoms of inversion of the uterus, taken in connection with the history of the case and her strange feelings, that we suspected the true state of affairs, and suggested an examination. This she positively refused, saying she 'was so weak and tender it would kill her,' and we were compelled to postpone it till the next day. The next morning I found her better, and the whole surface of the abdomen terribly blistered from the free use of turpentine. The inflammation and swelling were subsiding rapidly, and I insisted on making an examination; when I found the uterus inverted, and almost protruding from the vagina.

"Continued the warm fomentations, keeping her thoroughly under the influence of opium, with quinia, beef-tea, &c. &c.

"In a few days she improved wonderfully, and in two weeks we considered her strong enough to bear the operation, and attempted its reduction. We first brought her under the influence of chloroform, and then introduced the hand into the vagina, trying to reduce it by a kneading process with constant pres-

sure. We succeeded so far, after two hours' constant labour, as to get the fundus even with, if not a little inside of, the os. We tried to keep what we had gained by inserting and inflating gutta-percha balls, which we had procured for the purpose. Next day she appeared to suffer very little from the operation; but the India-rubber balls did not come up to our expectations, so the womb had dropped back into nearly into its former position.

"About eight weeks after, we made a second attempt, but the result was less favourable than the first. I forgot to mention that, about midway between the first and second operations, she had another violent attack of inflammation without apparent cause."

Upon receiving an invitation from Dr. Stewart, I visited the patient on the 11th of March, 1871, nearly six months after the inversion. I found the woman very prostrate and anæmic, and suffering from constant copious leucorrhœal discharges, and frequent hemorrhages. The uterus was completely inverted, with its fundus just within the vulva, and having fully undergone the process of involution. It was now as hard and firm as in the normal condition in the multiparæ. The bowels, by my direction, had been freely evacuated before my arrival, and I proceeded at once to make an effort to reposit it.

Placing her in the same position as heretofore described—upon the side of the bed, with her feet supported by Drs. Coventer and Salmon, I assumed my usual position upon my knees. Dr. Stewart, her family physician, was charged with the administration of the chloroform, and requested to produce profound anæsthesia. The first few minutes were chiefly occupied in compressing and moulding the uterus, rendering its walls more flexible, and in gently pressing up the organ so as to put the os upon the stretch and commence its dilatation. At this time the *uterine repositor* was introduced into the vagina, and its disk placed in contact with the fundus, and firmly held there by the intra-vaginal hand. The outer end of the instrument was placed against my breast, on the same level with the uterus. By means of the large circular spring, it readily kept its place, and left the other hand free to be used above the pubes to assist in forcing open the dilating os, which could be plainly felt through the abdominal walls. The spring at the outer end of the instrument enabled me, without danger of lacerating the tissues, to keep up a constant gentle pressure upon the fundus, and by leaning forward, to increase this pressure intermittingly. The force was exerted more directly upon the fundus by means of the repositor than was possible by the thumb or fingers, or by the round end of the large bougie. Pressure made through this spring is made more continuous than when made by the hand, and far less likely to lacerate the tissues. It was the first time I had used it, and I was delighted to find that it gave me a third hand, *which did not become fatigued*, and permitted me to use the left hand in manipulating the os in the hypogastrium; while the right hand easily held the instrument in contact with the fundus, and firmly grasped that part of the uterus not yet reflected, and remaining in the vagina. At the expiration of an hour and ten minutes, considerable progress had been made in reflecting the os down upon the body of the organ, when the patient seemed in some danger from the chloroform, and the process was for a short time suspended. The windows were thrown open, a little brandy was given by Dr. Hayes, who was present, and in a short time it was again deemed safe to resume the operation. Remaining continuously in the same position, I resumed pressure upon the repositor, holding, with my left hand, the anterior reflecting surface of the uterus which extended further and

further up into the abdomen. In one hour and twenty-three minutes from the time of taking my position, I had the pleasure of announcing that the organ was completely restored. As my associates had previously made much longer efforts, under circumstances much more favourable, they were at first incredulous, but soon verified my assertion by instituting, at my request, a careful examination.

Placing the patient comfortably in bed, and giving a full dose of morphia, she slept well that night, and I left her next morning feeling quite comfortable, and delighted with the prospect of being again restored to health and strength.

Nothing remarkable occurred during her convalescence, which, though slow, was uninterrupted, "riding out" during the month of April; and in the course of the summer, she regained, I understand from Dr. Stewart, her "usual health."

Remarks.—These two cases complete a series of nine cases of inversion, varying in duration from a few minutes to fifteen years after its occurrence, which have been reduced, by the writer, by manipulation at a single effort. The first case was reported to the Buffalo Medical Society in February, 1856, and was of only eight days' standing. After giving a full account of the case, which was published in the *Buffalo Medical Journal* of March, 1856, the writer concludes with the following remarks:—

"This case is regarded as interesting in many respects. It will encourage the growing belief among accoucheurs that reduction may be undertaken with reasonable hope of success, at a period much later than most writers have heretofore advised."

In the same article, alluding to a case of fourteen days' standing which had fallen under my observation in 1842, and in which no attempt at restoration was made, it is added: "With my present views upon this subject, I should abandon such a case as hopeless only after a long effort at reposition."

Fully convinced, from the result of the efforts made in this instance, eight days after inversion, of the feasibility of restoring the uterus in many cases heretofore considered irreducible, I did not meet with an opportunity of putting my convictions again to the test until the 12th of March, 1858, when I visited Mrs. M., near Hornellsville, who had been confined on the 22d of September previous, almost six months before; and after about one hour's continuous effort, succeeded in repositing the inverted organ. A full account of this case, with plates, and a description of the manner in which reduction was accomplished, was published in the July number of the *American Journal of the Medical Sciences*, for 1858. Permit me here to crave indulgence for one word in relation to priority in this operation. It is true, that Tyler Smith published his case April 24th, 1858, in the *London Medical Times and Gazette*, forty-two days after my operation in Hornellsville, and more than two months before the report of the case made its appearance, in the *American Journal of the Medical Sciences*. But I submit, that, more than two years

before, I had taken the initiative, and published my views and hopes. And I also insist that his subsequent success in April, 1858, could hardly have been known in this country on the 12th of March preceding, which is the date of my second operation. Upon this point I trust I shall be pardoned for gratefully quoting the following passage from the able article on this subject from the impartial and distinguished Professor of Obstetrics in the University of Louisville.

"Before I proceed to do this [give an account of the method of manipulation pursued by Dr. White], it is meet that I should pay a tribute of honour to our countryman, Professor James P. White, who has not received the credit he so well deserves, for his leadership in the revolution of gynecological practice, which he inaugurated. Even a superficial reading of his report¹ must satisfy any one that he regarded himself as a pioneer in his attempt to reduce, by the taxis, chronic inversion of the uterus; and that he was wholly unconscious that such a surgical feat had been performed either at home or abroad. Neither had it been so much as thought of at home, much less performed, nor had it been performed abroad in such a way as to attract professional attention or inspire confidence in it, until Dr. Tyler Smith, of London, published a case of twelve years' duration in the *Medical Times and Gazette*, April 24, 1858, which of course could not have been known to Dr. White, whose case was successfully treated on the 12th of March immediately preceding, though not published until July following, the earliest time that it could be published in a quarterly journal."²

On the 24th of August following, in the presence of Professors Austin Flint, Sen. and Jr., and Professors Thomas F. Rochester and Mason, I reduced an inverted uterus of over fifteen years' duration. This was accomplished in about fifty minutes and with less difficulty than those of six months. It should be stated, that the patient died on the sixteenth day after the operation, though it does not follow that her death was a consequence fairly chargeable to it.

An account of this case, as reported to the Buffalo Medical Association, will be found in the *Buffalo Medical Journal* for October, 1858, and from which the following paragraphs are cited:—

"She improved rapidly, with no untoward symptoms during the succeeding eight days, and at the end of that time considered herself perfectly well. On the morning of the ninth day, however, after returning from breakfast, she imprudently strained considerably at stool, and was suddenly seized with violent pains in the abdomen. She was at the same time startled by the coming in of a friend whilst she was on the vessel. The mother and husband had left her a day or two before, considering her perfectly well. She immediately went to bed, sent for me, and died on the seventh day after of peritonitis."

In commenting upon the report of this case in the Association, Professor Austin Flint, Sen., holds the following language:—

¹ Alluding, doubtless, to the case of 1858, and never having had his attention called to the one of January, 1856, reported in the *Buffalo Journal* more than two years before.

² Thoughts on Chronic Inversion of the Uterus, specially with reference to Gas-trotomy, as a substitute for Amputation of the Uterus. By Henry Miller, M.D. Richmond and Louisville Medical Journal, April, 1870, p. 14.

"I was present at the reduction of the uterus by Professor White, and also at the post-mortem examination. The reduction was effected with great ease, and under the moderate use of chloroform. He (Professor Flint) regrets, equally with Dr. White, the unfortunate accident which resulted in the death of the patient. The connection between the peritonitis and the operation did not seem to him to be very close; otherwise it would have supervened sooner. He did not think that it at all invalidates the success or propriety of the operation. The result will, perhaps, be thought to have more connection with the operation from an ordinary perusal of the case, than really exists. But a careful review of all the circumstances seems to show that the peritonitis was merely an unfortunate accident," &c. &c.

Professor Rochester said, "there were some points which had not been sufficiently dwelt upon by Dr. White or Dr. Flint. The appearance of the uterus, on examination after death, plainly indicated that no undue amount of force had been used in the operation. . . . In regard to the occurrence of peritonitis, he thought that it was a most unfortunate accident. Three-fourths of the cases which he had seen occurred at this season of the year. There was no doubt but that the exhausting nature of the difficulty under which the patient had laboured for so long, made the system more susceptible to the disease, and much less able to resist it. There was nothing in the appearance of the parts which would lead to the suspicion that the peritonitis commenced on the uterus; that it appeared to be a simple case of the disease. The greatest pain was referred to the epigastric region, and it was probable that this was its origin."

This case, of fifteen years, was much more easily reduced than the ninth case, just reported, and I am convinced that the opinion long since published by the writer that the difficulty of reduction is "as great immediately after complete involution, as at any subsequent period, however remote," will be found to be correct. I fail also to perceive why the *dangers* should be greater in consequence of delay, and hence my anxiety to prevent any erroneous conclusions upon that point which might be hastily drawn from the fact that this case terminated fatally, whilst those of six months recovered. The uterus, it is well established, completes the process of involution in from eight to twelve weeks. From the latter period onward I can perceive no cause arising from changes in the tissues of the uterus or surrounding organs which would enhance the difficulty or danger of reduction. At twenty years I should expect no greater difficulty in reduction than at the end of the same number of weeks. Judging from the cases of eight days, twenty-one days, and thirty-five days, and the eighth case just reported, it is, in my opinion, far more likely that it will be found by careful subsequent observation that the tissues are more susceptible to laceration from the necessary manipulations, during the latter part of the period of involution, than at any other time. As intimated in the report of this, the eighth case, which was between five and six weeks after labour, the impression in handling the uterus was that it would be easily torn. It is, during this change, neither muscular and flexible like the recently delivered uterus; nor firm and elastic like the unimpregnated organ. It will, I suspect, be found safer, in view of this condition, after about the twentieth day, to wait for the completion of this process,

notwithstanding the increased difficulties of the operation occasioned by such delay.¹

Observation and careful reflection—based upon the cases which have been committed to my charge, now numbering nine in all, varying, as already stated, in duration from a few minutes to fifteen years—confirm me in the opinion expressed in 1858. Indeed, my convictions are very decided, and I am incredulous as to the necessity of ever resorting to amputation, or the still more objectionable operation of gastrotomy. True, it may not always be reduced at a single sitting, as in all which I have encountered, but by means of the repositor, uniform and gentle pressure can be continued until the os is fully dilated, and the fundus pushed up through it. The insurmountable difficulty heretofore has been supposed to consist in our inability to maintain uniform and persistent pressure for a sufficient length of time. The hand soon became fatigued, and another hand, even of the same individual, could not be substituted without losing a part of what had been gained. This loss was increased when the hand of a fellow practitioner was introduced to continue the operation. No doubt great physical endurance, being able to maintain one position for a great length of time, has been an essential element in success. The various substitutes which have heretofore been resorted to for continuing pressure, where the operator became exhausted, have utterly failed. The elastic bags, mentioned in the last case, used by Dr. Stewart, are a fair illustration of their inefficiency. They press more upon the large surfaces anteriorly and posteriorly situated, and with which they are in contact, than they do upon the fundus, which has no firm ossific base of support, as have the rectum and bladder. The uterus ascends very soon, owing to the yielding nature of the vagina, and escapes from the reach of the distended vaginal bags.

The repositor, when it is deemed better to proceed in a more gradual manner, or when it may be found impossible to reduce it at a single effort, can be received with the uterus into a large cylindrical speculum, and by means of a T-bandage, can be made to press directly upon the fundus until the os is gradually dilated and all resistance overcome. By means of the large spring at the outer extremity the amount of pressure can be graduated to an ounce. The disk will follow up the fundus by means of this continuous elastic pressure until it disappears in the os and neck. Any intelligent assistant can be trusted to increase or diminish the pres-

¹ Pages 102 and 103, Lectures by Priestley, on the subject of the involution of the uterine parietes, says: "With the advance of the fatty transformations the uterus becomes, in a corresponding degree, friable, and continues so until it has completely returned to its usual condition. I have occasionally seen at the post-mortem examinations of women, who had previously borne children, the uterine tissue affected by fatty degeneration, and so soft and friable that a sound passed into the uterine cavity might be readily pushed through the uterine walls.

sure during the absence of the practitioner, as the exigencies of the case may demand. The pressure which the repositor can be made to exert is equally as gentle and far more persistent than the tent of sponge or sea-tangle, or the wedges of Barnes, when applied to dilate the os for the purpose of examining the cavity, when the uterus is in its normal position. These are the views expressed fourteen years since, in the article in the *American Journal of the Medical Sciences*, already alluded to. The following passage occurs:—

“We are all aware that the os and neck of the uterus may, by sponge tents and other mechanical contrivances, be widely dilated when the womb is in its natural position and of ordinary size. This dilatation is frequently made by those who are extensively engaged in the treatment of uterine affections for the purpose of perfecting diagnosis or instituting treatment. Of the susceptibility of these parts to be thus dilated, and that, too, without much risk of injury to the tissues involved or the general health, no one at all familiar with the subject will deny. What is the relation of parts in *inversio uteri*? Is not the vaginal sheath, which in the normal arrangement of parts was attached to the outside of the neck of the uterus, now, in the inverted state, firmly attached *within* the cavity of the canal of the neck of the uterus just at its orifice? The vaginal canal is securely attached at its lower extremity at or near the outlet of the pelvis, and, whilst it is very elastic, is less yielding in its longitudinal than transverse diameter, and not easily lacerated or detached from its connections, unless irregularly pressed as by a pointed instrument. Force or pressure, applied to the fundus of the inverted uterus, is resisted by the upper extremity of the vagina, which is now fastened upon the inside of the neck. The lower extremity of the vagina, being firmly attached, cannot yield, and the inevitable result must be the pulling open the mouth of the uterus, unless the tissues are lacerated before that part dilates. Can there be any greater difficulty or danger in *pulling* open this outlet than in *pressing* it open if performed with the same gentleness?

“The uterus and vagina in complete inversion represent a continuous bag or sac, doubled or reflected upon itself, with the open extremity of the sac securely fixed. Pressure upon the closed end of the bag will, it is plainly perceived, under such circumstances, result in straightening the bag by completely turning it the other side out. So with the parts concerned in inversion. Pressure upon the fundus, if well directed, pulls open, first its mouth, then its neck, and finally, if persevered in, doubles the body upon itself also, and carries the fundus through the os and neck and body to its normal position.

“Does any uterine pathologist believe it would be impossible safely to dilate the os and bring down the fundus of the uterus—completely inverting the organ—if carefully and perseveringly undertaken? If affirmatively answered, then why may we not pull open the neck by means of the vagina in the same gentle manner as we would press it open when in a normal position, and thus carry the fundus up through it by means of pressure upon that part when it is in a downward direction? Perhaps I may be too sanguine, but I am inclined to believe that well-directed pressure upon the fundus, if continued long enough, will in all cases, where there are no adhesions, result in restoration or reposition, no matter how much time may have elapsed since inversion occurred.”

Subsequent experience has but served to confirm the views then advanced. With the repositor, as before described, pressure is brought directly upon the fundus and maintained for any length of time desired and with such an amount of force as shall be deemed entirely safe. The uterus can only escape in an upward direction, and restoration must follow. Nor will it be more painful when thus dilated than when the os is dilated

by tents. I am of opinion that all cases of inversion *can* be reduced, without qualification as to their duration.

This opinion does not, however, seem to have been generally adopted by writers upon the subject, since these views were published, and hence it is deemed important to urge them upon the consideration of gynæcologists.

It is true, there are a few exceptions to this lack of faith. In an able "Report on Inversion of the Uterus," made to the New York State Medical Society, by appointment by Prof. J. V. P. Quackenbush, at its annual meeting in February, 1859, we find the following emphatic endorsement of the feasibility of reduction. After giving a very clear account of his theory of the causes of this accident, he says:—

"But whatever may be the manner of its occurrence; the proper treatment is what most demands our attention. And what is the proper treatment of inversion of the uterus? I answer, reduction. If the case be recent, reduction; if of twelve days' duration, reduction; if of twelve years' duration, reduction! At any time, and under all circumstances, reduction must be resorted to, and very few cases will be found which are irreducible. I lay much stress upon this subject, for I do not think it well understood." . . . Again, after referring to the opinion of Meigs when he says, "you have no art or skill or no power equal to the performance of such a miracle of surgery as that" (the reduction of a case of inversion of six months' duration), Prof. Q. adds, "gentlemen, this miracle has been done, and can be done, and should be done, and with proper management no case need be abandoned."

Notwithstanding this unhesitating affirmation of the doctrine of the feasibility of reduction in all cases of chronic inversion, which I had enunciated nearly two years previously, we find men in this state holding to the old doctrine that reduction is exceptional, and not by any means to be expected. The late Prof. Bedford, in his *Principles and Practice of Obstetrics*, Fourth Edition, 1868, uses the following language:—

"Should every effort *fail*—and such, in the most skilful hands, will not *unfrequently* be the case—care should be taken to return, if possible, the tumour within the vagina, and retain it *in situ* by the India-rubber pessary," &c. &c. &c.

Nor is this incredulity, or want of progress, confined to this country. In England, where Tyler Smith had reduced a case of twelve years' standing, and published it in April, 1858, expressing the opinion "that no case, with proper and prompt management, could be considered irreducible within a reasonable time after the accident," we find Dr. Meadows, in his *Manual of Midwifery*, published very recently, using the following language: "When the case has gone on unrelieved for many weeks, or even years, though attempts should always be made to secure reduction, &c. &c., yet the chances are *very greatly against success*," &c. &c.

Again, Courty, in his work published in 1866, in Paris, and who may be considered a fair exponent of the views in his own country, refers to reduction as being exceedingly doubtful. Indeed, he describes a method of reduction of his own which his reviewer, in the *American Journal of the Medical Sciences*, thinks "especially worthy of consideration and trial."

This consists in passing two fingers into the rectum and by depressing them into the anterior wall of the rectum, hooking them into the ligament on each side of the neck, and thus holding it down whilst, with the other hand, pressure is made upon the inverted portion of the organ, &c. &c. Again, he adds: "If the reduction is impossible, it is necessary to resort to palliative treatment or to *extirpation* of the uterus for its radical cure."¹ Nor are our German friends more hopeful. In a work by Dillenberger, republished in London, in 1871, he says: "Chronic inversion is held to require palliation; if that is vain, removal by ligature or excision."

Whence this want of confidence? The cases of reduction are now so numerous, and the operation of such demonstrable character, as not to admit of doubt.

I am utterly unable to account for this unbelief. Mere duration, I must repeat, cannot militate against success after the first three or four months have elapsed. And I am entirely incredulous as to there being such adhesions between the walls of the uterus as to withstand long-continued gentle pressure. Force may be as gradually applied by means of the repositor and speculum, as the operator may deem necessary for the safety of the patient. When the os has been thus carefully dilated, the hand of the operator, or, if the fundus has passed up into the neck, a large rectal bougie, can be called in requisition to complete the operation. Indeed, I indulge the hope that the day is not distant when all cases of inversion of the uterus will be regarded by all intelligent practitioners as amenable to treatment.

Perhaps something should be said here in relation to the manner in which reduction is accomplished. There seems great and unnecessary ambiguity and confusion on this subject. In all recent cases the fundus can be pressed into the body and neck, or "dimpled," as it is termed, by pressure upon the most depending part. In this manner, I am certain, the two cases which were repositied immediately after delivery and, to some extent, the one of eight days' duration, were carried up. In the case of Dr. Lockwood, in 1861, the womb had been inverted for about forty minutes when I arrived. Administering some paregoric and brandy to restore her from the collapse, I seized the uterus, pulled off the partly adherent placenta, and passed my hand, with the fundus before it, up into the cavity of the abdomen with scarcely more difficulty than would be encountered in inverting a wet bladder. Retaining my hand there for a short time, contraction soon came on under the influence of the ergot and stimulants which were given, and the patient (Mrs. W.) made a good recovery, and has since borne children. So with the one at eight days; in the report, it is stated, "having succeeded in 'dimpling' the

¹ Page 80, Paris edition, 1866.

fundus, pressure was maintained with the thumb at that point until the hand became nearly powerless. To preserve this depression whilst the muscles of the hand were permitted to rest, a rectal bougie, about twelve inches in length and one in diameter, was carried along in its place, fixed in the dimple, and pressure unintermittingly continued through it, by the left hand outside the vulva. Gradually the concavity of the fundus was found to be deeper and deeper until it finally became completely restored." This is doubtless the manner in which reduction takes place in all recent cases, whilst the organ is large and the walls flexible, and I was led into error by it in supposing that this same method obtained in all cases. This delusion was dispelled in my next case, of six months, in the report of which it is said in relation to the manner in which reduction was affected: "There can be no doubt that the os first commenced to yield and pressed down upon the intra-vaginal hand, which, it will be recollected, inclosed the entire uterus and the upper extremity of the bougie and kept them in contact. This part gradually dilated and passed down upon and over the neck, which in turn dilated, and doubled down upon itself. The fundus did not perceptibly dimple, or was not reflected upon itself during the operation. The organ was too firm and the cavity too small for any depression to be made upon the walls of the fundus."

I have nothing to change in this description of the *modus operandi* of reposition in chronic inversion. In the case of fifteen years the attention of the distinguished gentlemen who were present was called to this fact (the reflection of the os upon the neck), and they were requested from time to time to pass a finger up beside the hand of the operator and verify this point. The same careful observation was made during the most difficult of all the cases of reduction which I have encountered, the one at Port Dover, and with the same result. In my opinion, it would be unwise to double in the fundus upon the body after complete involution, even if it were practicable to do so. By so doing you would increase the size of the tumour to be carried through the cavity of the neck and os, by this intro-flexion, and also increase the difficulties of reduction. But all who make the effort to dimple the fundus of the unimpregnated uterus into the cavity, will perceive that it is impossible to effect reduction or inversion in this manner, even upon the dead subject.

By this explanation can all the apparent discrepancies as to the manner of reduction be reconciled. One practitioner has operated upon a recent case and restored it by dimpling in the fundus, whilst his no less observing and truthful fellow has restored the involuted organ by reflecting the os over the neck and body without at all being able to depress the fundus, and hence the difference.

Never having had a case of inversion occur in my own practice, I have never witnessed it, and shall not occupy space with any theory as to the cause and manner of its production.

The following figures represent the uterine repositors and its mode of application :—

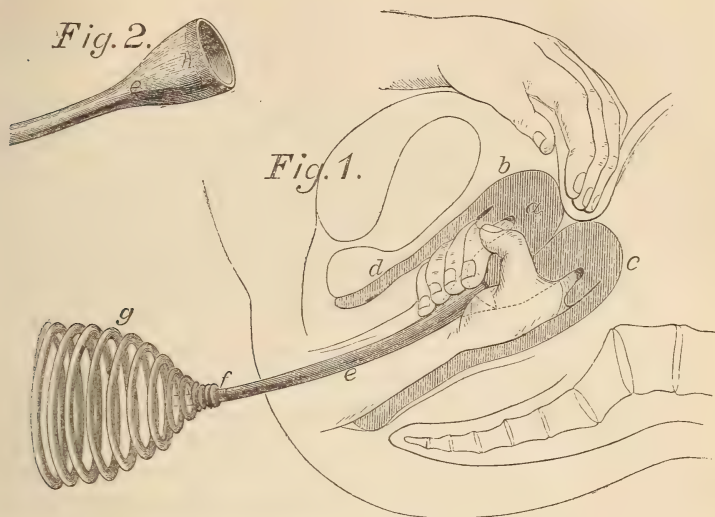


Fig. 1.

- a.* Uterus in process of reduction.
- b.* Anterior lip or wall of the uterus with the fingers of the left hand pressing upon it and assisting in pulling open the uterine cavity.
- c.* Posterior uterine wall semi-reflected.
- d.* Anterior vaginal wall.
- e.* Wooden or hard rubber stem of Repositor, its enlarged extremity held in contact with the fundus by the intra-vaginal hand of the operator.
- f.* Distal extremity of stem made into a screw, so as to fasten into *g*, a coil of No. 11 steel spring wire, requiring eight or ten pounds pressure by the breast of the operator, against which it is placed, to bring it down.

Fig. 2.

- h.* Uterine extremity of stem *e*, which is terminated with a soft india rubber disc $1\frac{1}{2}$ -inch diameter, the concavity into which the fundus is received being about one-half inch deep, with its terminal margin thin and soft.

ART. XII.—*Report of a Case of Tonsillitis Associated with Parotitis; Laryngo-Tracheotomy; Death.* By JOHN H. PACKARD, M.D., Surgeon to the Episcopal Hospital, Philadelphia.

IN the number of this Journal for January, 1870, I reported a case in which I had performed the operation of laryngo-tracheotomy for diphtheritic croup, with the effect of relieving the urgent symptoms, and prolonging the life of the little patient for six days. In the case now to be placed upon record, the chances for ultimate success seemed much more favourable, since there was no evidence whatever of diphtheritic poisoning; and yet, although the child's sufferings were relieved, his life was only prolonged for about eight hours.

L. H. M., æt. four years and nine months, a remarkably handsome and robust boy, was taken sick on the evening of February 17, 1872, with chill, followed by high fever, which lasted all night. When I saw him the next morning, the fever had in great measure subsided, but there was great swelling of both tonsils, and of the left parotid gland. His voice was strong, but much changed by the tonsillar enlargement, having what is known as the "Punchinello" sound.

I applied a solution of nitrate of silver, grs. xx. to the ℥j of water, to the tonsils, and put him at once upon the internal use of quinia and iron, with beef tea and milk, to which brandy was afterwards added, as, from the difficulty with which he swallowed even liquids, he soon showed signs of debility. Some relief was gained by the application of hot poultices, and of raw cotton heated, over the swollen parotid. The air of the room was kept at a temperature as nearly 72° Fahr. as possible, and moistened by the vapor from a vessel of hot water.

No material change took place, however, until the evening of February 19th, nearly forty-eight hours after the onset of the disease. He was then slightly cyanosed from the obstruction to his breathing, and I immediately sent for Dr. Hutchinson, who, at my request, had seen him with me earlier in the day, and for Dr. Brinton. The difficulty of respiration becoming urgent, both gentlemen agreed with me that the only resort was the performance of laryngo-tracheotomy.

Accordingly, at 9 P.M., chloroform was administered by Dr. T. E. Ridgway, and I proceeded to operate. The swelling on the left side added somewhat to the difficulty of the case, but there was no bleeding, and the cricoid cartilage and upper rings of the trachea were readily reached. Just at the moment when I enlarged, with a probe-pointed bistoury, the opening into the trachea, there was a rather free gush of venous blood. The ordinary double tube was at once inserted, and after the expulsion through it of a quantity, not very large, of blood, breathing was, with some trouble, established. Artificial respiration by Silvester's method was of much avail in doing this.

The child's temperature and pulse now became very much improved, and eventually normal. Some excitement ensued as the effects of the chloroform passed off, but in an hour or two a quiet and healthy sleep came on, only broken by the occasional clogging of the tube with small quantities of blood, easily swabbed away. He sometimes asked for bits of ice, or for ice

water, which comforted him greatly, but he would not take brandy, or nourishment in any form.

At about 6 A.M., somewhat more than eight hours from the completion of the operation, I was about going home, when I noticed a change for the worse in his face, and in the temperature of his hands, which were growing cool. A few minutes after, his pulse became imperceptible, and in spite of stimulation by enemata, by external heat, and by a magneto-electric battery, he sank, and died quietly at 7 A.M.

No post-mortem examination was permitted.

Within the past week I have seen several other cases of this combination of parotitis with tonsillar enlargement, but none in which any grave symptoms presented themselves, except the one now related.

Perhaps it should be stated that the propriety of scarifying the tonsils was carefully discussed before the operation of tracheotomy was decided upon, but the extreme urgency of the case, and the uncertainty of relief either from the former procedure or from cutting off the projecting portions of the glands, and the great danger of hemorrhage which it would be difficult or impossible to control, seemed to us sufficient arguments against such a course.

And notwithstanding the sad fact that the operation resorted to failed in the great object of saving the child's life, we cannot forget that by it the horrors of a death by suffocation were averted, and our little patient's last hours were at least painless. As to the actual cause of death, it seems to me that it may have been from the entrance of blood into the windpipe alongside of the tube; but against this it was impossible to guard further than we did, under the circumstances. It is greatly to be regretted that no autopsy could be obtained.

1928 Spruce St., Feb. 23, 1872.

ART. XIII.—*An Improved Strabismus Hook.* By SAMUEL THEOBALD, M.D., of Baltimore, Md. (with a wood-cut).

As the operation for strabismus was originally, and for a number of years thereafter, performed, it mattered little what form of hook was used for securing the tendon, upon which the tenotomy was to be performed. The conjunctiva and subconjunctival tissue were extensively divided over the insertion of the muscle, and the tendon being exposed was secured by the hook (or as is still practised in Vienna, by a pair of fixation forceps), and divided with scissors.

There were, however, several objections to this operation, and at present the "Subconjunctival Tenotomy" of Critchett, has almost universally supplanted it in England and I believe in this country as well. In Critchett's operation a comparatively small opening is made through the conjunctiva and the capsule of Tenon, at a point corresponding with the lower border

of the insertion of the muscle. Through this the hook is passed, and the tendon, being caught up by it, is divided subconjunctivally with probe-pointed scissors.

There is, however, one imperfection in this operation as hitherto performed. The tendon invariably slips off the hook before it has been completely divided. This is caused by the action of the scissors and may occur several times during a single operation, rendering necessary, each time, further excursions with the hook, before the tendon is divided to the satisfaction of the operator. Having seen this operation performed repeatedly within the last eighteen months at the various eye clinics of Europe and by the hands of the most skilful ophthalmic surgeons, I have no hesitation in saying that this accident is unavoidable with the strabismus hooks now in use.

It is for the purpose of remedying this defect of Critchett's operation that I have designed the Crochet Hook which is represented in the accompanying cut. With the exception of the crochet point it is similar to Von



a. Crochet hook, natural size. *b.* Magnified view of crochet point.

Graefe's strabismus hook. The tendon being secured by it, it is not necessary to force the point up against the conjunctiva, as is ordinarily done, so as to throw the tendon into the angle of the hook while it is being divided, but simply to hold the handle at right-angles to the muscle. This is an important advantage, as it greatly diminishes the laceration and stretching of the subconjunctival cellular tissue.

The operator, having ascertained that he has passed the point of the hook beyond the upper border of the tendon, and holding the instrument in the manner just described, may, with a few snips of the scissors, divide cleanly the whole tendon, without the danger of any of the fibres slipping off, and then the hook may be withdrawn without difficulty. That it really possesses the advantages which I have claimed for it, I have the testimony of such men as Bader, of Guy's Hospital, and Streatfeild and Lawson, of Moorfields Ophthalmic Hospital, London, who, having operated with it, are prepared to judge correctly of its comparative merits.

It is hardly necessary to add that the instrument must be carefully made so as to avoid anything approaching a fish-hook action. To do this it is only necessary that the receding point of the hook shall be smooth and rounded, and that the angle formed by its recession shall not be too acute.

BALTIMORE, March, 1872.

TRANSACTIONS OF SOCIETIES.

ART. XIV.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1871. Dec. 20. *On the Diagnosis of Anæmic Murmurs.*—Dr. J. H. HUTCHINSON read the following paper on this subject:—

Although much has been written upon the subject of anæmia, and upon the means of distinguishing murmurs accompanying it from those produced by cardiac lesions, yet cases occasionally occur in the practice of every physician, in which it is almost if not quite impossible to determine from a single examination whether or not there exists organic disease of the heart. Such a difficulty constantly arises in cases of acute rheumatism, a disease in which there is a decided tendency on the one hand to the occurrence of inflammation of the membranes of the heart, and, on the other, especially if the case have been treated by antiphlogistic remedies, or by large doses of alkalies, to the production of anæmia, which may persist long after the patient is well enough to leave his bed, or even the house, and which may, in consequence of the existence of cardiac murmur, give rise to the impression that permanent injury has been inflicted upon the heart. It, therefore, frequently becomes a matter of some importance to be able to say whether the murmur indicates valvular trouble, or whether it is simply an attendant upon alterations in the composition of the blood. In spite, too, of all that has been written, the cause of these anæmic murmurs still remains undiscovered. The definition of the anæmic murmur given by Walshe, the general accuracy of whose description will scarcely be impugned, is as follows: "An intra-cardiac hæmic murmur of this variety is of moderate or very slight intensity, commonly of medium or low pitch, short or moderately prolonged, of whiffing quality, very easily rendered temporarily harsh by excitement of the heart, and *modified in intensity by certain changes in posture.*¹ This murmur is, as far as I have observed, invariably basic in seat and systolic in time, produced at the orifices of the aorta and of the pulmonary artery—with a force at each, proportional to the power of its communicating ventricle; scarcely conducted along the aorta at all, frequently audible, on the contrary, at the second left or pulmonary cartilage; only in exceptional cases audible below the nipple; and never within my experience perceptible as far as the left apex." He also attaches much importance to the fact that cardiac murmurs of this class are generally accompanied by the venous hum. In regard to the mechanism of these murmurs he says this is obscure enough, but that it seems impossible to ignore the influence of the composition of the blood "in highly marked spanæmia;" he says, "neither the flaccidity of the veins, pressure on their surface, nor even velocity of current is required for the generation of murmur." Other writers are disposed to attribute their production to augmented friction of the blood against the orifices of the aorta and pulmonary artery, and others to the diminished tension of the valves and

¹ The italics are our own.

vascular walls, which is caused by anæmia, and which permits vibrations in them to be more readily excited and maintained than in health. All, however, so far as I am aware, with a single exception, are agreed that the seat of their production is the aortic or pulmonary semilunar valve. A paper will be found in the *Archives Générales* for 1866, in which the writer, M. Parrot, attempts to prove that they are really due to tricuspid regurgitation. This regurgitation is caused by an enlargement of the right auriculo-ventricular orifice, consequent upon dilatation of the cavity of the right ventricle. The walls of the right ventricle are thin in comparison with those of the left, and it is thought that when badly nourished, as they must be in anæmia, they oppose but a feeble resistance to the dilating influence of the blood. M. Parrot says that the so-called anæmic murmur is not heard immediately after a large hemorrhage, but sometime later, when the dilatation of the cavity has been produced. He says, moreover, that the seat of the greatest intensity of these murmurs is not, as has been generally supposed, at the pulmonary cartilage, but invariably over the body of the right ventricle, and generally at the level of the fourth rib, a little to the left of the sternum, and that they are constantly accompanied by pulsation of the jugular veins, which may be visible under ordinary circumstances, or may be only perceived when the patient is placed in bed with his head a little lower than his shoulders. It cannot be doubted that a murmur depending upon functional rather than organic disease is occasionally heard in the position above indicated, but there are few physicians accustomed to the careful examination of the heart, who will agree with M. Parrot that this is the most frequent seat of anæmic murmurs, or that these are constantly or even often attended by venous pulsation.

With the view of bringing to the notice of the profession a sign which I conceive to be of some importance in the diagnosis of anæmia, and which, if not wholly unknown, is at least practically ignored, I have determined to report the following cases, which are a few of those in which it has been observed.

CASE I. Annie C., æt. 18, born in Ireland, single, a domestic, admitted into the Pennsylvania Hospital, Nov. 17, 1870. Family history shows a tendency to phthisis. Has lost her mother and one sister of consumption. Her health has generally been very good; when well, is stout and strong and has a good colour. Came to America at the age of 15, and shortly afterwards began to "live out." Has lived in the same place during the past three years. Her work was hard, and she had sufficient though not very attractive food, and as a rule scarcely ever went out. She has never had malarial fever or rheumatism.

Began to menstruate when between 14 and 15 years of age, and the discharge continued at intervals of a month for a short time, but soon afterwards recurred regularly every fortnight, and has since continued to do so, when well. The discharge continued for from two to three days, and was usually abundant, necessitating frequent changes of napkins. Two years ago she became without any apparent (additional) cause, very pale and weak, and her menses ceased entirely for two months. She lost flesh and strength, and was obliged to give up work. Took tincture of chloride of iron, and went into the country. This treatment soon restored her to health, and her menses reappeared. Last July, after unusually close confinement to the house and hard work, she lost appetite, became pale, felt weak, grew thin; had shortness of breath and palpitation on slight exertion, and her menses appeared only once a month,

while their duration was a little extended. At this time she had frequent bleeding at the nose. Has never had cough, never hæmoptysis, and never any uncommon loss of blood save by the frequent menstruation. She took tincture of the chloride of iron without apparent benefit. She continued to lose colour until admission.

Two weeks ago began to suffer from severe irregular pains, neuralgic in character, at the base of the chest on both sides anteriorly. Has never had leucorrhœa.

On admission she was markedly anæmic; the hands and face were white, the circulation of the surface sluggish, the lips and tongue pale, and the conjunctiva pearly, tongue clean, appetite poor, and her bowels constipated. She has no gastric or pulmonary symptoms. She sleeps well.

The urine is somewhat increased in quantity, but otherwise normal. Over the base of heart is heard a well-marked anæmic murmur. It is systolic in time, soft in quality, and is not heard at the apex. When the patient is placed in the recumbent posture, this murmur becomes much more intense, and this is evidently not due to increased action of the heart. The murmur becomes less intense when the patient again assumes the erect position. There is no diastolic murmur, and no reason to suspect any organic disease of the heart. At the sides of the neck, between the two insertions of the sterno-cleido mastoid muscle on the right side, is heard a continuous, musical, venous hum.

Dec. 23. Patient improved very much, her gums, which were so pale, have now a good colour, the colour has returned to her lips and cheeks; a soft murmur is still heard at the base of the heart.

Jan. 1, 1871. Condition still continues to improve, the soft murmur before remarked has never disappeared.

16th. Discharged, much relieved.

CASE II. John P., æt. 16, born in England; occupation, sailor boy, admitted April 13, 1871. Family healthy; father died of a fever; previous health has always been good, and has been a sailor for about 17 months. Was taken sick on voyage from the West Indies; had fever, (?) general weakness, &c. Soon after his feet swelled, and he became unable to attend to his duties.

13th. Present condition anæmic and weak, feet and legs swollen and pit slightly on pressure; appetite good; no symptoms of digestive trouble. A soft systolic murmur is heard at the pulmonary cartilage; by placing the stethoscope over either jugular, the "bruit de diable" can be detected. Urine was examined, but neither casts nor albumen were found. Passes urine in normal quantity; symptoms seem to be dependent upon the anæmia. He was ordered the infusion of scoparium and the citrate of iron and quinia in doses of five grains three times daily, and good diet.

19th. Œdema diminished considerably since admission. The infusion of scoparium was only given for a few days. The murmur before noted is heard most distinctly when the patient is in the recumbent posture.

29th. Has improved to a certain extent; has lately had an attack of bronchial catarrh which has thrown him back. There is some lingering œdema of the lower extremities, though not nearly so marked as upon admission. Treatment unchanged. Patient was subsequently discharged very much relieved, the murmur having entirely disappeared.

CASE III. Annie G., æt. 19, American, domestic, admitted into Pennsylvania Hospital Oct. 12, 1871. Family of patient seems to be healthy. She began to live out four years ago. Her work has generally been light; her food has always been good; she has never had anxiety of any kind;

she began to menstruate at 15, and was always perfectly regular until one year and a half ago; she at that time missed one or two periods, and has ever since menstruated very irregularly. Soon after this functional derangement she became, as she expresses it, nervous; had headaches and backaches, and worried about herself. She gradually lost colour. The pallor of her skin progressed steadily, but her strength held out tolerably well until a few weeks before her admission to the hospital.

Condition on admission. Exceedingly anæmic; skin presents almost a waxy appearance; mucous membrane of lips and mouth white; appetite poor; bowels regular. Suffers from palpitation of the heart on exertion, a very faint hæmic murmur is heard at pulmonary cartilage; this is rendered considerably more distinct when patient is placed in the recumbent posture. Ordered the best diet that the hospital affords, and a teaspoonful of the following mixture: Liq. potass. arsenit. fʒij; tr. nucis vomicæ fʒss; vini ferri amari fʒviiss; to be taken three times daily.

Nov. 6. Her face has gained some little colour; is somewhat stronger, but improvement on the whole has been slow. A faint venous hum is heard over the jugular veins, but it is only heard when slight pressure is made with the stethoscope. The cardiac murmur is heard not merely at the pulmonary cartilage, but when the patient is lying down it is heard over the body of the heart and along the left edge of the sternum as far down as the ensiform cartilage.

In all these cases it will be noticed that the murmur became more intense upon the patient's assuming a recumbent position; in one case, indeed, it was occasionally only to be heard in this position, and in this case the venous hum was to be heard only when pressure was made with stethoscope over the course of the jugular vein, and the head of the patient was turned strongly to one side, so as to put the muscles of the other side on the stretch. I am, in consequence, inclined to believe, that, in many cases in which the anæmia is not marked, and in which no murmur can be heard when the patient is standing, it may sometimes be perceived by causing the patient to change his position. It will be recollected that in the passage quoted from Walshe's work on *Diseases of the Heart*, he calls attention to the fact that the anæmic murmur is modified in intensity by certain changes of position, but the context justifies the inference that these changes are of a nature to cause some excitement of the heart's action; whereas, in the cases reported by me, the change from the erect to the recumbent posture did not cause increased frequency of the pulse, which was, of course, noted carefully before and after having recourse to auscultation. The patients were also re-examined when they had risen from the bed, and in all these cases the murmur was then found to be less intense than it had been the moment before.

In a search through all the works on physical diagnosis which are at present accessible to me, I find but a single reference to this important point in the diagnosis of anæmia. And this is by an author whose book is indeed a standard one, but is also not as much read as it deserves to be. I allude to Dr. Stokes, of Dublin. When speaking of the murmur occasionally heard during the convalescence from maculated typhus, he mentions, as one of its characteristics, its frequent disappearance or diminution in the erect position, and says: "This may help us in distinguishing it from an organic murmur, but I am unable to say whether the same is not observable in ordinary cases of anæmia."

I am at a loss to explain the cause of the increased intensity of the murmur in the recumbent position. It is possible that the relation of the

heart to the large arteries at its base is of such a nature that increased friction of the blood against the sides of the arterial orifices takes place in this position, or it may be, that, the respiration being less free and more embarrassed in this than in the erect position, the circulation through the pulmonary vessels is interfered with, and, as a consequence, that a murmur may be produced at the pulmonary cartilage; or, admitting M. Parrot's theory to be correct, that this interference with the pulmonary circulation favours the occurrence of tricuspid regurgitation.

1872. Jan. 17. *Encysted Tumour of the Neck*.—Dr. WALTER F. ATLEE reported a case of this form of tumour occupying the submaxillary region on the left side.

The patient was a young man aged 25 years. The tumour was about the size of a goose-egg, and had existed for several years. For more than a year attempts had been made to effect a cure by means of a seton, injections of iodine, and by repeatedappings. Extirpation, which had been delayed on account of its extreme difficulties and dangers, was finally resorted to, and the patient recovered.

The chief interest in this case is derived from the fact that it appears to show that encysted tumours of the neck may have their origin in certain changes taking place in the lymphatic gangliæ, as suggested by M. A. Richard (*Memoirs de la Société de Chirurgie*, t. iii.). Another reason for calling attention to the case is the fact that English surgical literature is most remarkably barren on the whole subject of tumours of the neck. In this respect Holmes's *System of Surgery* is quite deficient.

Feb. 7. *Report on Meteorology and Epidemics*.—Dr. WM. L. WELLS read the following report on meteorology and epidemics for 1871:—

From the meteorological record kept at the Pennsylvania Hospital, it appears that the most remarkable circumstance connected with the temperature of the past year was the extreme warmth of both March and April, a warmth unparalleled since the records have been begun in this city. The maximum temperature was on the 17th of March, when it reached 73°, and the minimum on the 29th when it fell to 34°. The maximum temperature of April was on the 9th when it reached 85°, and the minimum on the 2d when it fell to 38°.

The mean temperature of March was 48°.70 Fahr., or more than 7° above the average, and half a degree above March, 1859, the warmest previously known.

The mean temperature of April was 58°.15, Fahr., about 6½° above the average, and more than a degree and a half above April, 1844, the warmest previously known. Fortunately May also was warmer than usual, so that no injury was done to vegetation by frost.

The heat of the summer months, particularly that of August, was above the average, but it was far below that of last year, and consequently we find only 11 deaths from sunstroke, instead of 52 as in the year before, and a diminution of 173 in the deaths from cholera infantum.

The temperature of the last two months of the year was decidedly below the average: that of December being even lower than the average mean of January, and nearly 4° below the average mean of December for the last forty-seven years.

The statistics which follow have been furnished me by the kindness of Geo. E. Chambers, Esq., Registration Clerk of the Board of Health.

The total number of interments in Philadelphia in 1871 was 16,993,

a number exceeded only by the years 1864 and '65, when there were respectively 17,582 and 17,169 deaths, the great number then being caused chiefly by the deaths among soldiers, which amounted in the first year to 1598, and in the second to 778. The increase of 1871 over 1870 was 243, or 1.45 per cent. Deducting those who died elsewhere, and were counted because buried in Philadelphia (633 in number) we have 16,360 deaths, which makes (as the population of the city is 675,000), one death in 41.26, or 2.42 per cent.

Of the deaths recorded there were 8942 males and 8051 females, showing an excess of 891 males, or 11.06 per cent. The deaths of persons over 20 were 8251. Under 20 they amounted to 8742, or, deducting 875 stillborn, 7867. The preponderance of deaths among males was observed both in adults and in children, although a little greater in children, on account of the very great excess of stillborn males. Excluding the stillborn, the proportions of both sexes are about equal in the deaths of both adults and children.

The average of deaths for each quarter of the year is 4593; for each month 1431; for each day 46. The fourth quarter, which shows the highest mortality, had 44 per cent. deaths more than the second quarter, which had the least mortality. This is almost the reverse of the preceding year, when the fourth quarter, instead of having the greatest, had the least mortality, and the highest mortality was in the third quarter.

The mortality at the Blockley Hospital, connected with the Almshouse, was 401. That of the coloured population of the city, 957.

The epidemic diseases which in 1870 caused the greatest mortality either entirely disappeared, or very greatly diminished in the year just past. Thus scarlet fever showed a diminution of nearly 700, falling from 956 to 262. Relapsing fever nearly entirely disappeared, as only 7 died of it, instead of 162, which was the mortality of 1870. Of these, 3 were in January, being the last remaining of the epidemic of the preceding year. Yellow fever, which caused so much alarm in 1870, although the mortality was only 13, disappeared entirely in 1871, no cases originating in the city. These are only the most marked instances of what occurred also in all the other zymotic diseases, with one terrible exception. There were 100 fewer deaths from enteric fever, 52 less from croup, 27 less from diphtheria, 24 less from pertussis, 20 less from typhus, spotted fever, &c., 5 less from rubeola, 3 less from cholera, and 1 less from malarial fever, puerperal fever, and erysipelas, respectively.

The year in which these different diseases caused the maximum mortality was 1861 for scarlet fever and diphtheria, when 1190 died of the former, more than five times the mortality of last year, and 489 died of the latter, more than three times the mortality of last year; 1864 for typhus and malarial fevers, when 818 died of the former, nearly ten times the mortality of last year, and 145 died of the latter, or nearly three times that of last year; 1865 for enteric fever, when 773 died of it, two and a half times the mortality of last year; and 1866 for rubeola and cholera, when 221 died of the former, or more than five times the deaths of 1871, and 910 of the latter, instead of 4 deaths from cholera in 1871.

The diminished mortality from these diseases alone, as compared with the preceding year, was 1104. There was also a diminution of 123 in the deaths from diseases of the digestive system, and a diminution of 215 in the deaths from diseases of the nervous system; 34 less from old age, and 205 less from debility, over one year.

On the other hand, there was an increase of 67 in deaths from diseases of the circulatory system, and an increase of 35 in those from diseases of the respiratory system; there were 152 more deaths from congenital debility and malformation, and 53 more stillborn. The chief cause, however, of the total increase of 243 in the mortality was smallpox, which has been raging so fearfully in the past few months, causing in all 1879 deaths in 1871. This terrible disease has been very fatal, not only in this country, but in the British Islands, and on the continent of Europe, during the past year. In England the mortality in 1870 from smallpox was 1259, in 1871 it rose to 13,174, and in London alone 7876. In all England the proportion of deaths was 18 to 10,000 population, in London 24 to 10,000. (In Philadelphia 27 to 10,000.) In London the epidemic began in the end of 1870 and gradually increased until the beginning of May, after which it decreased, showing, however, a slight tendency to increase again in the last few weeks of the year. The mortality in the first quarter was 2400, in the second 3241, in the third 1255, and in the fourth 980. As it decreased in England it began on this side of the Atlantic. In Philadelphia it did not begin until the end of July. There were but 8 deaths from it in the first six months of the year, and in June, the last of these months, there were no deaths. In July there were 5 deaths, in August 16, in September 18, in October 331, in November 640, and in December 861, thus showing that even after the disease had fairly obtained a foothold, more than two months passed by before the mortality became suddenly alarming.

The manner in which the disease skipped about the city at first was remarkable. It began in the neighbourhood of 16th and Sansom, in August, passing in the same month to 17th and Pine. Of the 16 deaths in that month, 7 were in the 8th ward, where both these localities are situated. It is singular that in the following month, September, only 2 cases were reported in this ward, but a number more than a mile away, near 10th and Master, and 8th and Columbia Avenue, in the 20th ward, where not only no death but no case of the disease had occurred in the month preceding. In October it increased to an alarming extent in that ward, causing 89 deaths there, attacked the western part of Race Street, where also it was pretty severe, and established itself in all parts of the city, save only in Manayunk and its neighbourhood. In November its severity diminished one-fourth in the 20th ward, but doubled or nearly so everywhere else, and then for the first time it became really severe in the southern part of the city, where the most crowded streets and degraded and filthy population are found. In this month 6 cases were reported as originating in the 21st ward.

In December the disease was still more severe and still more uniformly diffused; diminishing considerably in violence only in the 20th ward, which it had attacked so overwhelmingly in October, and where it had already begun to diminish in November.

It is worthy of notice that the neighbourhood less attacked than any other and last attacked was the northwestern part of the city, Manayunk, and its neighbourhood, from which the prevailing winds blow in the cold weather, while the district earliest attacked, and most severely, was that part of the closely built up portions of the city nearest to this very healthy district.

In November and December the 3d and 4th wards were most severely attacked, while Germantown and West Philadelphia were, next to Manayunk, the most nearly exempt portions of the city.

The deaths among the coloured population were about in the same proportion as those among the whites.

As regards the age of those attacked, the young were especially liable to it. 836, or nearly half the whole number of deaths, were of persons under 10 years of age; 607, or nearly one-third, of persons under 5; 316, or about one-sixth, under 2 years; and 203, or nearly one-ninth of the whole number, were of infants under 1 year.

Between the ages of 10 and 20 only 323 died, being nearly 100 less than half the mortality in the preceding ten years. Between 20 and 30 there was an increase to 397, or nearly half the mortality in those under 10, and a little more than one-fifth of the total mortality. After 30 the risk of death rapidly decreased, the number of deaths in each succeeding period of ten years being, on the average, a little less than half that in the one before it, until we come to the period between 60 and 70, when there were 24 deaths, followed by only 7 in the next ten years, and 2 between 80 and 90, after which there were no deaths. This rapid diminution is of course far greater than can be accounted for by the smaller number of persons at a more advanced age.

A remarkable feature of this epidemic was the number of persons attacked who had had smallpox already, some even two or three times.

As regards the protection afforded by vaccination and revaccination, the statistics of the Board of Health are incomplete, but I have received the following particulars from W. M. Welch, M.D., physician in charge of the Municipal Hospital. In that institution there were treated in all in 1871, 1189 cases, of which 382, or nearly one-third, proved fatal,¹ 32 per cent. Of these, 390 had never been vaccinated, of whom 254 died, or 65.1 per cent. 331 had been vaccinated in infancy, and had a good mark, of whom 33 died, or 9.9 per cent.; 166 vaccinated in infancy—fair mark, of whom 27 died, or 16.2 per cent.; 302 vaccinated in infancy—poor mark, of whom 68 died, or 22.5 per cent. As regards revaccinated cases Dr. Welch furnishes no statistics, but says only that "smallpox after successful revaccination is in his experience exceedingly rare." As a large number of cases of variolous disease after revaccination have undoubtedly occurred in the city, this experience of Dr. Welch confirms the experience of others that such cases are generally very light, so much so as hardly ever to be taken to the hospital.

The only epidemic of smallpox which has equalled the present in severity since 1807 (when the records of the Board of Health begin), was in 1824, when there were 330 deaths, which, in proportion to the population of 135,000 or 140,000 at that time, gives about the same relative mortality as in the past year. No other epidemic has, in any one year, caused more than half the relative mortality of these two years.

The present epidemic was preceded by a period of remarkable exemption from the disease, during which, we may suppose, persons would become careless and neglectful of vaccination until smallpox, ever watchful of any such opportunity, would cruelly punish them for their thoughtlessness. A like period of exemption is to be found before the epidemic of 1824 (which began in the preceding year), as from 1820 to 1822, both inclusive, there was no death from the disease, and there was another period of exemption before the epidemic of 1861.

¹ Some of these deaths occurred in 1872, the cases having been admitted to the hospital in 1871.

REVIEWS.

ART. XV.—*The Principles and Practice of Surgery.* By JOHN ASH-HURST, JR., M.D., Surgeon to the Episcopal Hospital, Surgeon to the Children's Hospital, etc. Illustrated with five hundred and thirty-three engravings on wood. 8vo., pp. 1011. Philadelphia: Henry C. Lea. 1871.

THE declared "object of this work is, as its title indicates, to furnish, in as concise a manner as may be compatible with clearness, a condensed but comprehensive description of the Modes of Practice now generally employed in the treatment of Surgical Affections, with a plain exposition of the principles upon which these modes of practice are based." There has been claimed for it, further, an American character, rendering "accessible to the profession at large the experience of practitioners of both hemispheres," "so much in this country having of late years been done for the advancement of surgical art and science, especially by the experience of the late war."

Any single volume of one thousand pages, embracing the Principles of Surgery and Practice as applied to the many general and local surgical diseases and injuries, must of necessity be, in the main, a work for students and general practitioners, and the chief questions to be answered in the estimating of its value, real and relative, are, how far does it present the pathological views of the day, and the practice most in accordance with those views as confirmed by the experience of surgeons competent to observe and decide. The answering of these questions necessitates an examination of the work somewhat in detail.

Of the forty-seven chapters into which the book is divided, two are devoted to "Inflammation;" two to "Operations in General and Minor Surgery;" two to "Amputations;" two to "Effects of Injuries in General, Wounds, and Gunshot Wounds;" eleven to "Surgical Injuries" of vessels, nerves, muscles, bones, joints, and special regions; and the remainder to "Surgical Diseases," local and general. The chapters on Inflammation certainly present a brief, plain, easily understood statement of the more modern doctrines. All sides of questions yet under discussion are given, and there is to be noticed a much-to-be-commended freedom from those positive dogmatic assertions of individual opinions as established laws and facts, which are to be found in some of the writings of the present time.

"Inflammation," our author says, "was formerly considered as a disease, an entity, a something superadded to the natural condition of the part. This view is now almost universally abandoned, and authors, though differing as to the proper explanation to be given of many of the phenomena of inflammation, are, I think, generally agreed that these phenomena are mere modifications of the phenomena of natural textural life. These changes, which are always due to the action of an irritant, no matter whence derived, may be observed as affect-

ing the phenomena respectively of function, nutrition, and formation, and in each the changes are primarily in the direction of excess."

As regards *function*, there is first increased activity, followed by perversion, and eventually, perhaps, by diminution or even total abolition. The *nutritive* changes are shown in an altered state of the vascular system of the part (as Mr. Simon has well put it: "A part does not inflame because it receives more blood. It receives more blood because it is inflamed"); in an altered state of the blood itself; in an altered condition of the parenchyma (temporary hypertrophy); and in a change as regards the neurotic condition, which doubtless reacts upon both vessels and parenchyma. The *formative* changes consist in the production of lymph and of pus. There may be also a destruction of existing tissue, resulting in its being thrown off as effete material, by the processes of ulceration and gangrene. Respecting the origin of the lymph-corpuscle and the fibrillous element of lymph,

"the two theories which at present chiefly divide the suffrages of pathologists are, (1) that which looks upon the new cellular elements as the result of proliferation of pre-existing cells, and (2) that which regards the cells of inflammatory lymph as identical with the white blood corpuscles and cells found in the lymphatic vessels, as identical, in fact, with the *wandering cells* which Recklinghausen has described as existing in connection with the ordinary connective-tissue corpuscles. * * * Hence, it would appear not improbable that both elements of inflammatory lymph may originate in pre-existing structures, the corpuscular from an increase in the number of wandering cells, from proliferation of the ordinary connective-tissue cells, or from both sources, and the fibrillous element from a transformation of the filamentary intercellular substance."

The kindred vexed question of the origin of the pus corpuscle is treated with similar fairness.

"In many cases (as in abscesses), the former [pus] seems to originate directly from the latter [lymph] by a simple liquefaction of the gelatinous intercellular substance of lymph; but in other instances the pus cell appears to have a different source. Virchow and other observers believe that pus-corpuscles originate from rapid proliferation (luxuriantion) of connective-tissue and other nucleated cells; while Cohnheim, on the other hand, maintains that the sole origin of the pus-corpuscle is the migration by amoeboid movement of the white blood-corpuscle through the vascular walls. Finally, Dr. Stricker and his able co-labourers, while acknowledging the origin of pus-cells from both these sources, have shown that the pus-corpuscles themselves divide and multiply, and that in profuse suppurations this is probably the chief mode of pus formation."

The remainder of the chapter is devoted to a "clinical view" of the causes, symptoms, course, and terminations of inflammation—well-known facts and phenomena being clearly yet briefly stated. Perhaps the most interesting point noticed is the reference to Dr. Meissner's experiments as appearing to "show that certain nerve fibres exercise a peculiar 'trophic' function, and that a lesion of such fibres may be the immediate and determining cause of an inflammatory condition of the parts supplied." In a recent lecture by Eulenburg, the same view is further maintained, nutritive changes, even to atrophy and hypertrophy, being attributed to trophic-nerve lesion.

"Experiment and pathology have demonstrated that alterations in the nutrition of the most different tissues—epidermoid, subcutaneous, muscular, osseous, articular, lymphatic—ensue in consequence of artificial or accidental injuries of nerves. Without mentioning the numerous experiments performed in proof, I will only call to mind the phenomena following gunshot injuries or other trau-

mata causing partial or total destruction of mixed nerve trunks. Our late war has furnished abundant material for this purpose, and I have myself observed the most exquisite examples in proof. * * * As Fischer has lately exhibited, œdema and erysipelatous reddening (the shiny fingers and toes of Paget), further, anomalies in the growth of the hair, exanthemata, ankylotic joint inflammations, contractions, hyperplasia, and later, concentric atrophy of the bones have all been observed after injury of the nerves of the extremities. To refer all these alterations exclusively to injury of the vaso-motor nerve fibres would be a labor of the greatest difficulty; for we know that elevation of temperature, reddening, and increase of secretion occur after division of the vaso-motors—effects which, after injuries of mixed nerve trunks, either do not present at all or only transitorily, and, as a rule, soon to manifest opposite appearances. There must be, therefore, some further condition which compensates or more than compensates for the injury of the vaso-motors, and this, in the injury of mixed nerve trunks, is the *concomitant injury of the secretory, and in a narrower sense, the trophic nerve fibres.* * * *

"The one-sided progressive atrophy of the face occurring occasionally as an isolated disease it is certainly unreasonable to refer to vaso-motor cramp of a year's duration; as little, too, are evidences of a relaxation of vessels present, so that we must necessarily recur here to disturbances in the trophic system, as Samuel has long ago justly maintained. It is worthy of mention, too, that hypertrophy of one side of the face may occur in connection with injuries of nerves; Sterling has already communicated an interesting case of this kind. This coincides perfectly with the experiments of Mantegazza, who has observed hypertrophy of the connective-tissue, of the periosteum, the bones, lymph glands, etc., in animals after section of the nerves."

Chapter II: "Treatment of Inflammation," hygienic, local and general. Some very judicious remarks are made upon the *diet* of patients suffering from inflammation, and Dr. Ashhurst is evidently no believer in the starvation plan.

"It has been, I think, clearly shown by the researches of modern investigators, that in addition to the waste of tissue, which accompanies the inflammatory process, there is a large expenditure of force (as evidenced by the great elevation of temperature), and it is but rational to suppose that this waste and expenditure ought to be compensated for by a supply of easily-assimilable food. As to the results met with in practice, it of course becomes any one surgeon to speak with great modesty and hesitation; I can, however, honestly aver that I have met with better success in the treatment of inflammation upon this plan, than I did when I habitually directed low diet, according to the rules still laid down in many surgical works."

In the local treatment, special attention is called to "mediate irrigation" as described by Petitgand. Practically we are not familiar with it, but theoretically the plan commends itself, as safe, certain, and easily regulated; the which cannot be said for the ordinary methods of applying cold and heat. Poultices are more highly esteemed than they have been by many writers since the time of Liston. When the patient or nurse will see to it that they are properly made and applied, they are unquestionably of great service; but when, as is too often the case, they are badly made and irregularly changed, both surgeon and patient will be much better satisfied with the use of warm water and oiled silk. In the "Constitutional treatment," the debatable points are bloodletting and the use of mercurials. Our author has decided opinions, in harmony, too, with the great majority of the better surgeons of the day.

"It seems to me but reasonable that we should adopt the same principles in the management of traumatic inflammations that we do in dealing with those of idiopathic origin; and hence, that venesection should not be resorted to in

the treatment of surgical affections, except for its immediate mechanical effect in relieving a vital part, the functional or structural integrity of which is in imminent danger. For example, bleeding may be necessary in a case of traumatic as in a case of ordinary apoplexy [under circumstances stated]. * * * Or when a wound of the lung is followed by great dyspnœa, pain and oppression, the loss of a little blood may be of benefit, just as it would at the outset of an ordinary pneumonia presenting similar conditions. Even under these circumstances, I believe local bleeding, by cupping or leeching, will be usually better than venesection; and it should always be considered that the loss of blood is an evil, which may indeed be preferable to a greater evil, but is never a positive good."

The mercurials he holds in higher esteem than do many of his fellow-workers and writers.

"I cannot but believe," he says, "that it does exercise an influence, particularly over the second stage of inflammation, or that attended with the production of lymph. It is, however, like bloodletting and antimony, a dangerous remedy, and a positive evil, though it may on occasion do good. It should, I think, be reserved for cases in which an important organ is endangered, and should even then be used with great caution and reserve. It is especially adapted for inflammations of fibrous and serous membranes, such as the meninges and peritoneum. It should be given in small doses, as $\frac{1}{4}$ — $\frac{1}{2}$ gr. of calomel, or $\frac{1}{2}$ gr. of blue mass, and may be conveniently combined with opium and ipecacuanha."

The latest English writer on surgery (Gant) thus presents what is, perhaps, the most prevalent view:—

"Formerly, also, and until recently, it was unanimously held, that the same influence prevented or retarded the effusion of fibrin, and promoted its absorption. * * * Long as this therapeutic theory prevailed, and practice accordingly, there are reasons for doubting the accuracy of the one and the efficacy of the other. That mercury exercises some kind of an influence over nutrition there can be no doubt; but it is questionable how far the natural course of an inflammation, having induced the effusion of fibrin, may itself tend to absorption, apart from the co-operation of mercury."

The tendency seems to be to the restricting of the use of mercurials to the accomplishment of two purposes, the production of catharsis and the peculiar effect of the agent upon syphilitic manifestations.

Chapter III.: "Operations in General; Anæsthetics." The general remarks, while pertinent, need not especially engage present attention. Those on anæsthetics deserve the careful consideration of all readers of the book. The danger of anæsthetics being recognized, cases in which they should be employed are pointed out and indiscriminate use forcibly warned against.

"It is to be feared that students and young practitioners often get a false impression upon this point, and from seeing the frequency and apparent profusion with which anæsthetics are administered by their clinical teachers, derive a notion that these agents are perfectly harmless, and may be indiscriminately resorted to under all circumstances. The true rule upon this matter (a rule which is, indeed, applicable to all our perturbing modes of treatment) is, that when anæsthetics are not positively beneficial, they are injurious. Hence, under ordinary circumstances, they should not, I think, be employed, except for really important operations, and those which without their use would be tedious and painful. It is seldom right to give anæsthetics for purposes of diagnosis merely; there are, however, parts of the body the lesions of which are so obscure, and in dealing with which a mistaken diagnosis might lead to such grave errors of treatment, that it is often not only justifiable, but even imperative to employ anæsthesia in their examination. * * * Cases for what are

called *capital operations* (where life is immediately involved), are almost invariably cases for anæsthesia; for smaller operations, the practice should vary according to the time required for their performance; thus, anæsthetics should be given before operating for piles, or for phimosis, for these are tedious procedures; while opening an abscess, cutting an anal fistula, or tapping a hydrocele, is quickly done, and does not require the use of these agents."

The comparative merits of ether and chloroform are thus stated:—

"Either agent has some advantages over the other, and some corresponding disadvantages. Chloroform is more prompt in its effects than ether, the patient is usually quieter while coming under its influence, it is less apt to cause vomiting, a smaller quantity than of ether is required to produce anæsthesia, and the patient reacts more quickly when the inhalation is stopped. It, however, requires much greater care in its administration than ether, and its use is attended with much greater risk to life. The above statement gives my own estimate of the relative merits of these agents, and, I believe, corresponds pretty closely with the opinions usually entertained on the subject." * * *

Mr. Spencer Wells, at a late meeting of the Medico-Chir. Society, objecting to chloroform, especially on account of its vomiting, to ether because it was so troublesome, declared his preference for bichloride of methylene, regarding it as the best anæsthetic.

Dr. Ashhurst's preference for ether is, we believe, not shared by all surgeons, and it must be confessed that the rapidly increasing list of deaths from the administration of chloroform is causing many an operator to question the propriety of continuing the use of his hitherto favourite anæsthetic agent. In this connection we are surprised to see no reference made to the preliminary subcutaneous injection of morphia when chloroform is to be given. It certainly seems in many cases to render necessary a much smaller quantity of chloroform, and to prevent to a large extent the occurrence of vomiting.

Chapter V. treats of "Amputations in General," the preparation of the patient therefor, the method of operating, the diseases of the stump, the comparative mortality of different amputations, and the causes of death.

Respecting the relative merits of the various methods of amputating, it is written—

"If any general rule were to be given, I should say that the circular incision or Teale's method gives the best stump in the forearm, the modified circular in the upper-arm and the upper part of the thigh, the common double-flap operation immediately above and below the knee, the circular or lateral flap in the lower part of the leg, and the oval operation at the joints."

This estimate seems to be a very just one, and there certainly exists, particularly among many civil surgeons, an undue prejudice against the circular and modified circular operations. The paragraph on "Mortality after Amputations" contains a reference to Dr. Addinell Hewson's investigations upon barometric variations as affecting the death-rate, and statistical tables of the relative mortality after amputations according to locality, cause, and time of operation, tables compiled with much labour and care, and that will be valuable to surgeons for future reference.

It is a little surprising to see that the percentage of deaths after amputations of the leg in civil hospitals is higher than in military surgery in the proportion of about 4 to 3. With reference to early as compared with late amputations our author says:—

"It is now, I believe, universally acknowledged among military surgeons that primary amputations (except of the hip-joint and the upper part of the

thigh) do better than others; of those which are not primary, the secondary do better than the intermediate. It is, however, commonly said that in *civil* practice secondary amputations are more successful than primary, and this difference has been accounted for by the different hygienic circumstances by which soldiers and civilians are respectively surrounded. I believe that the usual statement upon this point is erroneous, and that a careful collation of statistics will show that in both civil and military practice, primary amputations are followed by better results than others."

In an abstract of a report on the military service of the late Franco-German war, by Pirogoff, we find the following, bearing on this question :—

"With this opportunity, he takes occasion to differ with Langenbeck, who stated, at the 74th anniversary of the Friedrich Wilhelm Institute, that field service could only be of use to the severely wounded when it began immediately after the battle and ceased not later than two days after it; all unavoidable amputations, therefore, must be performed in the first 12–24 hours after the battle. The later and intermediate amputations give the most unfavorable mortality per cent.

"Against this view, Pirogoff maintains that conservative treatment and late amputation are so indissolubly united that if the possibility of the first be granted, the probability of benefit from the last must be acknowledged. The former doctrine of Bouchet and Larrey was consistent; it demanded that amputations should be as quickly performed as possible, because it claimed that the preservation of limbs was in general more dangerous than their amputation, and taught that whoever did not amputate immediately after an injury ran the risk, in the attempt of saving more limbs, of losing more lives. So soon, however, as conservative surgery is considered admissible into military service, so soon, to be consistent, must protest be entered against early amputations. To defend conservative surgery and at the same time to advocate early amputation is to be inconsistent at once. In considering the favourable course of early in comparison with the unfavourable course of later amputations, it must not be forgotten that it was only the upper extremity that furnished this favourable result. And here conservative treatment has been attended by the best results. In the lower extremity, early as well as late amputations show the same unfavourable results. Whoever here gives preference to late over early resection must give the same preference to late over early amputations. In a word, the introduction of conservative treatment in modern military surgery is of itself a protest against early amputation, which of course admits of no preservation of the limbs."

The paragraph on the causes of death after amputations closes in these words :—

"*Pyæmia* is the chief cause of death after pathological amputations, after those of expediency, and after primary amputations for injury.

"*Exhaustion* is the chief cause of death after secondary amputations for injury, and ranks next to pyæmia as a cause of death after the primary, and those classed as pathological.

"Mr. Birkett, from a study of 171 cases, in which the operation was performed either by himself or under his direction, concludes that 'a large proportion of the patients submitted to amputation, when inmates of a metropolitan hospital, are the subjects of more or less advanced chronic disease of the thoracic or abdominal viscera,' and that 'the chances of death after operations appear to depend almost entirely upon the previous state of each patient's constitution.'"

Chapter VI. treats of "Special Amputations," the chief operations in the various localities being duly described. Hip-joint amputations, with tabulated results, occupy four pages; probably more space than they are entitled to, considering the rarity of their performance. We regret, however, that, as so much was written, a few lines more had not

been added, making reference to the method of Lacauchie ; a method by which the disadvantages of the abdominal tourniquet can be avoided, hemorrhage being controlled by compression of the femoral artery.

Chapter VII. : "Effects of Injuries in General, and Wounds ;" embracing the consideration of shock, its nature and treatment, traumatic delirium, the local effects of injuries, the classification and treatment of wounds. Considerable attention is paid to the so-called "antiseptic treatment," and the value of it is summed up as follows :—

"As has already been said, the merits of the antiseptic method cannot yet be considered as positively determined. Failure on the part of other surgeons to attain the expected results, is attributed by the advocates of the plan to some mistake or neglect in the application ; and such may doubtless be the case. But it is obvious that any mode of treatment which is so intricate and complicated as to elude the skill of such excellent surgeons as have failed with the antiseptic dressing, is not likely ever to be adapted for general employment."

Is it this intricacy and complicated nature of the antiseptic dressing that causes failure ? Is it not, in the great majority of cases, want of care in applying a not very complicated dressing, and unwillingness to devote to such application the requisite time. Antiseptic dressing does not necessarily mean carbolic acid dressing, but that which will prevent the access to the surface of a wound or ulcer of undisinfected air.

Prof. Lister chiefly employs, it is true, carbolized dressings, but prefers the chloride of zinc solution as a primary application to wounds already open. A year ago he spoke favourably of the use of cotton, either simple or carbolized, on account of its well-known power of filtering air of contained organic germs ; and Guérin has claimed that raw cotton is the best of all dressings after amputations, best because of its easy application, and complete prevention of pus-decompositions. Observation of civil and military hospitals has never elsewhere shown us such healthy appearing wounds, and such freedom from decomposed, irritating secretions, as in Lister's own wards ; and certainly the extraordinarily successful issue of his cases cannot be attributed to the special favourableness of the hygienic surroundings of those under treatment in the Edinburgh Infirmary.

Chapter VIII. is devoted to "Gunshot Wounds," a subject unfortunately very familiar to American surgeons. There are stated, as usual, the once characteristic appearances of the entrance and exit wounds. It was noticeable in our war, and still more in the continental wars since, that with the improvement in precision of the arms employed, and the changes made in the shape and weight of the bullet, the differences in these wound-appearances have become much less marked ; so much so indeed that Pirogoff has declared that, in the Franco-German war, "the orifices of entrance and exit could not be distinguished, both openings presented the same appearance." In reference to excision in the upper extremity, Dr. Ashhurst says :—

"It may now be said that in most cases of injury of this part of the body, excision should be the surgeon's first thought, and should be preferred to amputation whenever the destruction of parts does not manifestly render the latter operation imperative. * * *

"Primary excision is the best mode of treatment for gunshot injuries of the shoulder-joint. * * *

"Excision of the elbow will still be an operation to be recommended in military practice, for the prospect of preserving a useful arm fully justifies the surgeon in incurring the slight additional risk over that of an amputation.

"Excision of the wrist-joint has not been much practised in military surgery; the results of such operations as are recorded have been sufficiently satisfactory as regards life, but rather unsatisfactory as regards the utility of the preserved limb."

These are certainly the views of the great majority of surgeons, and the experience of our war justifies them. We find, however, that Pirogoff, in the war of 1870, found "some fifty cases of recovery of gunshot wounds of the shoulder, elbow, and ankle without resection, a fact which is significant against the adoption of early resections." Respecting wounds of the knee-joint our author agrees with Guthrie in the opinion that they require amputation; the choice being regarded as lying between this operation and excision of the knee. This latter operation, with its mortality of over 75 per cent. (fatal in every case that we have personally observed), "should be banished from the practice of military surgery." But should the "rule be regarded as imperative that every gunshot fracture of the knee-joint is a case for amputation?" We have thought so, though we have seen a very few cases of recovery without either amputation or excision. But we now find it stated in the abstract already several times referred to, that

"What neither he [Pirogoff] nor any other surgeon [?] could have anticipated was the so extraordinarily happy termination of a great number of cases of gunshot wound of the knee-joint.¹ He counted forty such fortunate cases; in some cases, indeed, even motion was maintained in the penetrated joint, and in two instances of recovery the ball was still in the bone. He ascribes these favourable results to the smallness of the chassépot projectile and the direction of the wound, from before backwards."

As was to have been expected, in the preparation of this chapter free use has been made of the very valuable circulars issued from the Surgeon-General's Office.

Chapter IX.: "Injuries of Bloodvessels." For the arrest of hemorrhage the ligature is preferred to either acupressure or torsion, and the surgical world at large is of the same opinion. It requires no little courage and faith on the part of an operator to lay aside the ligature, and trust to the needle, or torsion, for the proper closure of a large artery. Whether or not the recognized disadvantages of the ligature can be wholly overcome by the employment of antiseptic animal ligatures, and whether the latter will ever come into general use, remains to be seen. About seven pages are devoted to the "lines of incision for deligation of special arteries," more than half of which space is taken up with woodcuts. We may express our doubts of the value of such cuts in a work on surgery proper, or indeed in any work; for unless one knows well the anatomy of the several regions he will not be able to derive any benefit from them, and if he does know such anatomy he will not need the illustrations.

Chapters XI., XII.: "Fractures." The various definitions, explana-

¹ "Neudorfer in his writings cites repeatedly cases of recovery after gunshot wounds of the knee-joint, some of them with partial use of the injured joint. It is stated also in the appendix (p. 224) "we may now cherish the hope as well founded, if it should become an axiom in military surgery in cases of injury to the knee-joint to apply an immediate plaster bandage instead of resorting as hitherto to immediate amputation, that the number of cases of recovery would be much greater; might be cited, indeed, as of daily occurrence, instead of being regarded as rarities and fortunate exceptions to a rule."

tions, and directions are clearly given in as few words as the subject will permit. Ununited fractures are considered somewhat in detail, upon which subject the literature of the profession has lately been increased by the very valuable monograph of Berenger-Feraud. In the treatment of fractures of the clavicle, we find the use of an axillary pad condemned; as we think wisely. How it has managed to hold, as long as it has, a place in the surgeon's armamentarium we have never been able to understand, for when by its position of any special service its pressure is so great as to be intolerable. The simple adhesive-plaster dressing is not only the simplest but the best, a dressing also applicable to fractures of the several parts of the scapula.

The pistol-shaped splint receives the usual commendation in the treatment of fractures of the lower extremity of the radius; why, we fail to understand; for the possible securing by its employment of any theoretical benefit we have found to be accompanied by the causing to the patient of no little practical discomfort and pain. By some oversight no mention is made of Prof. Moore's (of Buffalo) interesting and valuable experiments and practical conclusions deduced therefrom; an omission which we hope to see corrected in a second edition. Preference is expressed for the "sand-bag and extension" treatment, the "American method," in fractures of the femur. The cumbersome long splints with their wretched perineal bands ought to be consigned to "Museums of Antiquities."

Chapter XIII.: "Dislocations." To the ordinary dislocations of the head of the radius should be added that form of displacement to which attention has lately been called by Dr. Lyell; occurring in young children, especially girls, characterized in the two cases that we have seen by semipronation of the hand, pain only when an attempt is made to pronate and supinate, unimpaired motions of elbow and wrist; the difficulty being entirely, and at once, relieved by strongly supinating the hand, and making gentle pressure over the head of the radius. In treating of hip dislocations, due regard has been had to the experiments of Bigelow as set forth in his masterly monograph.

Chapter XV.: "Injuries of the Head:" a chapter written with much care, on a subject that has evidently engaged no little of Dr. Ashhurst's thought and attention. In reference to "Concussion," he says:—

"Every case of concussion is, I believe, accompanied with *shock*, and in many instances the symptoms of the latter condition alone can be recognized. * * * Even in the intermediate cases, which are often spoken of as typical instances of concussion, though, as a matter of convenience, we may trace their clinical history, and divide it into stages, we cannot point to any symptoms which definitely characterize the lesions of concussion, apart from those of other cerebral injuries. Indeed it would be better, I think, if we could dispense altogether with the term concussion as denoting a *condition*, and look upon it as merely indicating the *cause* of what have been described as *concussion lesions*, viz.: *cerebral contusion, laceration, extravasation*. * * * I regret that I cannot agree with those surgeons who consider the diagnostic marks between compression and concussion to be plain and easily recognizable. * * * Though in certain cases we can say without hesitation, in view of the one-sided paralysis, profound coma, and other symptoms mentioned, this is compression or that is concussion, there are other cases in which it is impossible to draw such a distinction; compression may disappear spontaneously, leaving concussion, while concussion, by a continuance of intra-cranial hemorrhage, may end in fatal compression."

Of its treatment he says:—

"As a matter of fact it is very seldom indeed that a case of concussion requires any stimulus at all. * * * [After reaction has taken place], rest, both mechanical and physiological, should still be enforced; and if the patient be restless, the surgeon need not fear to give opium. I am aware that there is a good deal of difference of opinion as to the propriety of administering opium in injuries of the head, but surely there is nothing to contraindicate it in what we know of the pathology of these cases, while its soothing and calming effect is exactly what is required."

He "would restrict the use of the trephine within very narrow limits; it is not to be used with the idea of relieving compression, nor with the idea that there is any special virtue in the operation, to prevent encephalitis. The trephine should be used merely as Hey's saw is used, mechanically, to enlarge an opening which would be otherwise too small to allow the surgeon to carry out plain therapeutic indications."

Upon its use in extravasations, in intracranial suppurations, and in cases of epilepsy, his views are eminently judicious and in harmony with the teachings of the day.

Chapter XVI.: "Injuries of the Back." A table is here given of 36 resections of the spine for fracture, of which 29 resulted fatally, 3 were relieved, in 2 no benefit was received, and in 4 the result is unknown. "The operation, far from increasing, positively diminishes the chances of recovery."

Chapter XVII.: "Injuries of the Face and Neck." Of "foreign bodies in the air-passages" the mortality is stated to be "in general terms, as nearly as may be, 1 in 3, the death-rate *after operation* being less than 1 in 4 (24.8 per cent.), but *without operation*, more than 2 in 5 (42.5 per cent.). The period during which a foreign body may remain in the air-passages, and yet be spontaneously expelled, varies from a few hours up to many years. In 64 of 124 cases of spontaneous expulsion with recovery, collected by Mr. Durham, this period was between one and twelve months."

Respecting the relative advantages of laryngotomy and tracheotomy, our author says:—

"While I do not believe that any rule of universal application can be safely laid down upon this question, I would advise in general terms, that *tracheotomy above the isthmus* should be preferred in all cases in which time is afforded for a careful and deliberate operation; but that if great haste be essential, *laryngotomy* * * * should be performed instead. When the operation is required by the presence of a foreign body in the windpipe, a more definite rule may be given. If the offending substance be lodged in the larynx, that part itself must be opened; but if the foreign body be in any other part of the air-passages, tracheotomy is the operation to be chosen."

Chapter XVIII.: "Injuries of the Chest." In the paragraph on the treatment of lung wounds, the "hermetical sealing, or Howard's method," is condemned as usual; as is also venesection, the use of which proved in our late war to be unnecessary and injurious, and according to Neudorfer the same was found to be true in the Franco-German war. Many an American surgeon, however, remembers how he once went forth, believing that in cases of wound of the lung, complicated with severe internal hemorrhage, he was to tie up the arms, and bleed "*pleno rivo ad deliquium*."

Chapter XIX.: "Injuries of the Abdomen and Pelvis." Contusions of the abdomen, attended with laceration of the abdominal viscera, are pronounced, "in the majority of instances, necessarily fatal." In this connection an intimation might have been given, for the benefit of the student and younger practitioner, that the visceral lacerations may occur without

there being any external indication of injury. In one case under our own observation, a man having been run over by a horse-car, there were no external appearances of abdominal injury, yet he died in $2\frac{1}{2}$ hours, and post-mortem examination revealed lacerations of the stomach, duodenum, liver, spleen, and both kidneys. The diagnosis of penetrating from non-penetrating wounds is declared "often difficult, and any exploration with a probe would be manifestly improper." Yet we hear, not very unfrequently, of surgeons of eminence probing (once even to the extent of *twenty-two inches*), gunshot wounds of the abdomen, in which there has been penetration and wounding of the contained viscera. Might it not be well for these surgeons to content themselves with a little less accuracy of diagnosis, that they might afford their patients a little more chance of recovery? In cases of the female catheter slipping from the fingers and being sucked into the bladder, we find it judiciously advised to "*at once dilate the urethra and remove the foreign body*." I have known fatal ulceration to result, under these circumstances, from the delay of only a few days."

Chapter XX.: "Diseases Resulting from Inflammation." Though the classification of ulcers is simpler than that in many similar works, we should have preferred seeing the yet simpler division into acute and chronic, the classification adopted by Prof. Gross. As to "transplantation of cuticle," Dr. Ashhurst is not so much of an enthusiast as some of his fellow surgeons at home and abroad.

Considerable space is occupied in the consideration of "hospital gangrene," but not more than we should expect in an American work published so soon after the close of the war. Our own experience was fortunately very limited, but, in the few cases under our care, the *perman-gante of potassa* answered every indication; and we can agree with Dr. Ashhurst in his statement that "I have never as yet been disappointed in its effect; it is but just, however, to say that I have not had occasion to try it in any cases of the worst form, such as are described by Guthrie."

In the treatment of "carbuncle," the use of the knife is not advised, adhesive plasters and pressure being recommended. A few years ago, it will be remembered, considerable attention was attracted to the external application of castor oil and turpentine combined, a method of treatment which certainly succeeds well in many cases.

Chapter XXI.: "Erysipelas." The differential diagnosis is clearly and succinctly given; the treatment recommended, judicious. It might be suggested that the tr. ferri chloridi may be advantageously pushed beyond the limit stated (\mathfrak{m}_{xx} to \mathfrak{m}_{xxx}); the dose can be safely increased to \mathfrak{zj} – $\mathfrak{3ij}$. In severe cases of the phlegmonous variety, multiple incisions are recommended. Will it not be safer in many cases to make a single long free incision, and avoid the risk of the skin between the many small incisions becoming gangrenous, as it will sometimes?

Chapter XXII.: "Pyæmia." As to the pathology of this "bane of operative surgery," our author considers the most plausible theory, "that which makes it dependent on the introduction of a septic material into the blood, and which looks upon the processes of thrombosis and embolism as subsidiary and not absolutely necessary. * * * * We are thus brought to the conclusion, that the only theory which is capable of accounting for all the phenomena of pyæmia, is that which supposes the pyæmic condition to be induced by the absorption of the septic material (usually in a liquid, but possibly sometimes in a gaseous state), which

unfits the blood for the processes of healthy nutrition, induces capillary stagnation and its consequences, low forms of inflammation, or serous and synovial effusions, and may, and probably does in most cases, cause venous thrombosis, giving rise to the occurrence of loose and ill-formed coagula, which, rapidly undergoing disintegration, cause capillary embolism, and thus produce the secondary deposits, or metastatic abscesses, which are so common in this affection."

In the late discussion in the French Academy, Verneuil declared that "purulent infection ends in suppuration but does not arise from it," and that there can be "no pyæmia without sepsine and emboli," (the limited application by the French of the terms pyæmia and purulent infection will be remembered).

Chapter XXIII.: "Diathetic Diseases" (Struma, Rickets). Passing over the general remarks on struma and the pathology of tubercle and scrofula; the relations of the latter diseases to operations are thus stated:—

For "operative interference in tuberculous cases, no general rule can be given. The prognosis of an amputation or excision for tuberculous disease, is undoubtedly less favourable than that of a similar operation for scrofulous, or simple chronic inflammation. If there be evidence of tuberculosis of internal organs, any operation should, as a rule, be avoided; the only exceptions are—(1) when it appears that the visceral disease is caused by the external affection, and when, therefore, there would be reason to hope that by removing the latter the progress of the former might be checked; and (2) when the patient's suffering from the external disease is so great, that the operation is called for simply for the relief of pain. * * * With regard to operations in *scrofulous* cases, no rule of universal application can be laid down. I am decidedly of the opinion that, in the immense majority of instances, enlarged cervical glands should not be interfered with. * * * With regard to operations for scrofulous bone and joint disease, the question is more doubtful. As a rule it may be stated that no operation should be performed, while a reasonable hope remains that a cure can be effected by expectant treatment; if, however, the powers of nature should be manifestly incompetent for the task, or if (as is often the case among patients of the poorer classes) the time which would probably be required for a natural cure be an important consideration, operative measures may be properly resorted to, and will often be followed by the most gratifying results. Excision is of course preferable to amputation, when the circumstances of the case permit a choice."

Two pages are devoted to rickets, a disease which is, very possibly, more common among us in its milder forms than is generally believed, and upon which valuable papers have of late been given to the profession by Jacobi, of New York, and Parry, of Philadelphia.

Chapters XXIV., XXV.: "Venereal Diseases." These, Dr. Ashurst, in common with most of the more recent writers, regards as *three* in number: *gonorrhœa*, *chancre*, and *syphilis*. The recommended treatment of the first is wholly or chiefly by injection, a method which is doubly valuable when it is practicable for the surgeon to secure a thorough preliminary cleansing of the urethra and the contact of the medicated solution with all the affected part; almost impossible when the ordinary syringe is employed, but perfectly and easily accomplished by the use of a "reflux catheter."

The most interesting question connected with the two remaining affections is as to their relationship. The "dual theory" is very generally accepted by writers, though the diversity of chancre and syphilis is, "even now, denied by a good many surgeons, and is practically ignored by a still larger number." But there are some phenomena, in some cases,

which it is very difficult to reconcile with the declared entire distinctness of the two diseases. Explanations are given, and attempts made to square facts with theory, but it seems as though sometimes more credulity was required for the acceptance of the explanations of the "dualists," than the theory of the "unicists." It is possible that an early and exact diagnosis of syphilis may yet prove obtainable by the microscopic examination of the blood. It will not be forgotten that Dr. Salisbury declared, four years ago, that he had discovered algoid forms pathognomonic of syphilis; and now we have Losterfer announcing the discovery of corpuscles in the blood of syphilitic patients, so characteristic of the disease, and so confined to the subjects of it, that he is able simply by microscopic blood-examination, to determine who is and who is not syphilitic; and Losterfer's honesty and accuracy are vouched for by Skoda, Stricker, and Hebra.

Chapter XXVI.: "Tumours." The classification adopted is the usual one of English writers of the present day, viz.: non-malignant and malignant; the former including cystic tumours, solid tumours and out-growths; the latter, cancer and epithelioma. Respecting the local origin of cancer, Dr. Ashhurst expresses himself as follows:—

"That a local cause, traumatic or otherwise, can, without any previous predisposition on the patient's part, give rise to the formation of a cancer, it is hard to believe; at the same time, cancer may undoubtedly (from a practical point of view) be looked upon as, at first, a local affection, its early manifestations being of a local nature, and the only applicable treatment being of a topical character; even when 'cachexia' precedes the appearance of a cancerous tumour, the removal of the latter may relieve, at least temporarily, the cachectic condition."

In this connection and bearing upon the question of the relationship of epithelioma and other forms of carcinoma, it is interesting to notice Billroth's declaration, that "further observations, with new aids, have made it appear to me more probable that, even in the smallest cancerous nodules, epithelial elements always gave the first start for development. This has been confirmed by Waldeyer."

Chapter XXIX.: "Surgical Diseases of the Vascular System." The paragraphs on aneurism, constituting the greater part of the chapter, are interesting, and the statistical tables given will be found of much service to later workers in the same field. With reference to the comparative merits of ligation and compression, it is held that certainty so far as the cure of the aneurism is concerned, and danger to life, are on the one side, safety and greater liability to failure on the other. Compression is to be preferred—

"(1) In all cases in which, from the age or general condition of the patient—from the existence of heart disease, or other aneurisms, or of marked structural change of the arterial coats—or from the prevalence of erysipelas, pyæmia, etc., the operation of ligation would be attended by particular risk; (2) in all cases in which the aneurism, being detected at an early stage, would be in the most favourable condition for the use of compression, and in which the pressure treatment, if even it failed, would not seriously lessen the prospect of benefit from subsequent ligation; and (3) in all cases, on the other hand, in which the aneurism, from its locality or size, would not probably be amenable to the ligature, and in which, therefore, pressure should be at least tried, before resorting to such formidable measures as amputation, or the 'old operation.'"

Chapter XXX.: "Diseases of Bones."

Chapter XXXI.: "Diseases of Joints." Here again we have carefully written condensed statements of what is at present known of the

pathology of the diseases in question, and of the various methods of treatment in themselves and compared with each other.

Chapter XXXII. : "Excisions." To those for whose use the work under review is especially to be recommended, viz., students and general practitioners, the entire chapter will well repay careful study and remembrance; to surgeons it is not less valuable on account of its statistics.

Chapter XXXIII. : "Orthopædic Surgery." For the relief of the various forms of club-foot (diseases held to arise from the contraction of certain muscles or the paralysis of their antagonists), Dr. Ashhurst speaks more highly of tenotomy than do some who have written of late years on the subject. Of course if spastic contraction of a tendon or a set of tendons is the essential element of the disease in a given case, then section of such tendon or tendons will be the first and most important step towards remedying the deformity, but if paralysis from intra-uterine disease be the cause, tenotomy will in a large proportion of cases be unnecessary and improper. We should have expected, considering the proposed "American character" of this work, that its author would have noticed, at least by name, some of the orthopædic surgeons of our country.

Chapters XXXV., XXXVI. : "Diseases of the Eye and Ear." As might have been expected from the size and scope of the work, the various subjects touched upon in these chapters are hardly more than simply touched upon, thus giving the chapters much of a dictionary-like character. What, however, has been written is, so far as it goes, in harmony with the teachings of the best ophthalmic and aural surgeons of the time. The special fields of ophthalmology, otology, and gynecology have been so widely extended during the past twenty years that in no single volume on general surgery can anything other than a bird's-eye view of them be taken.

Chapters XL., XLI. : "Hernia." The various operations for the "radical cure" having been referred to, their value is thus summed up :—

"Hence, it would appear that the most favourable view to be taken of any operation which has been as yet proposed for the radical cure of hernia, is that while not necessarily followed by grave consequences, it is not unattended with risk, and by no means certain to effect the object designed; and that in consideration of the safe and really satisfactory means of palliation afforded by the use of a truss, the radical treatment must be looked upon as at best an operation of complaisance or expediency. * * * Occasionally justifiable, the operation is not, in any case, one to be urged upon the patient, nor to be performed without his fully understanding the uncertainties and dangers of the procedure; and in the immense majority of cases the surgeon will best consult both his own reputation and the good of his patient, by dissuading from any but palliative treatment."

As an important sign in establishing the diagnosis of strangulation, as distinguished from incarceration, peritonitis, and vomiting from other than hernial causes, attention is called to the absence of impulse on coughing, the limit of impulse being further of service as a guide to the location of the seat of strangulation. The use of the warm bath as an adjuvant to the taxis is spoken of as "often efficient" and proper to be employed; by some, local heat has been recommended. The bath is of service only by the general relaxation induced, and heat locally applied seems to us to be decidedly improper. It cannot affect the size of inextensible white-fibrous rings, and must increase the amount of blood brought into the constricted portion of the bowel, *i. e.* in one respect has no action favourable or unfavourable, in another tends to increase the

already existing difficulty of effecting reduction. Cold, on the contrary, while it does not affect the inelastic tissues, lessens the amount of blood, and stimulates to contraction the muscular fibres of the bowel, thus diminishing the hernial contents. Philosophically, cold is *the* local adjuvant and practical results are in harmony with theory. No reference is made to the use of ether or rhigolene spray, which has been frequently and successfully employed; nor, to "subcutaneous aspiration," which has been highly lauded by the few who have tried it. Herniotomy without opening the sac is commended in proper cases, *i. e.* those

"In which the seat of constriction is external to the sac; but as this point cannot always be determined beforehand, this mode of operating should be tried in every instance in which the duration of strangulation and the urgency of the symptoms do not contra-indicate its employment. A safe rule is that given by Birkett—to try this method in those cases and those only in which the taxis would be deemed justifiable."

Chapter XLIV. : "Urinary Calculus." Under this general head are embraced the nature, varieties, symptoms, and treatment of stone: lithotomy and lithotrity of course being considered somewhat at length. A valuable practical suggestion is, in lithotomy, to insinuate the finger into the bladder above the staff, "between its concavity and the roof of the urethra," thus obviating the difficulty in children of reaching the bladder.

Chapter XLVI. : "Diseases of the Urethra and Urinary Fistula." In this chapter we notice that it is, as usual, recommended after external perineal urethrotomy to introduce a catheter, and retain it for a couple of days. It is, we believe, becoming more and more the American custom to dispense altogether with the catheter, the advantage of keeping which in the wound is questionable.

The remainder of the work is devoted to the various diseases and malformations of the genital organs, male and female.

We have thus passed in review the several chapters of "Ashhurst's Surgery." Does it present the pathological views of the day, and the practice most in accordance with those views, as confirmed by the experience of surgeons competent to observe and decide? Unquestionably, yes; with possibly a very few exceptions, and these exceptions have reference to questions still under discussion. For students it is, we believe, the best work we have, and general practitioners will find pleasure and profit in reading it. Its statistical tables make it a work to which the author's fellow-workers will gladly refer. Dr. Ashhurst has done a good work, and we thank him for it. True, it is to a large extent a compilation, but it is well compiled; and who in these days could write a valuable *original* work on the whole immense field of surgical principles and practice? When the second edition is brought out, we hope that the size of the volume will be lessened by the omission of a large proportion of the "533 wood engravings" with which it is "illustrated." Its value will not, we conceive, be impaired thereby.

P. S. C.

ART. XVI.—*Transactions of the American Ophthalmological Society. Eighth Annual Meeting. Newport, July, 1871.*

THE American Ophthalmological Society, organized in 1864, has now entered on the ninth year of its existence. The first two meetings were held in New York, the session of 1864 took place in Boston, that of 1867 at Niagara, and the subsequent ones at Newport, R. I. A full report of the "Transactions" has been published by the Society every year, except the first of its existence; and these volumes, although differing in size, all contain able and interesting articles by the practitioners devoting themselves to this specialty in various parts of the country, and will bear comparison with the transactions of any similar body abroad.

The present volume opens with a tablet to the memory of "Albrecht von Graefe, whose life and work greatly helped to turn a doubtful specialty into a certain science."

This is followed by a "Report on the Progress of Ophthalmology," by Dr. B. JOY JEFFRIES, of Boston, which catalogues the various articles on Ophthalmology published during the past year, both here and abroad, mentioning most works by title, and giving an abstract of others which have greater claims to novelty.

Following this is a description of "An Apparatus for Cutting Microscopic Sections of Eyes," by EDWARD CURTIS, M.D., of New York. We have here an account of an elegant and useful piece of apparatus which enables Dr. Curtis often to obtain a section of an entire eye; and further, an admirable description of the various processes of hardening, staining, washing, and preserving tissue, necessary to the proper display of its physiological and morbid anatomy. Dr. Curtis prefers paraffine, thinned by kerosene (its natural solvent, first suggested by Dr. W. Thomson, of this city), to the usual method of imbedding in wax and oil. Dr. Curtis uses for staining his tissues, carmine 3ss, borax 3ij, water f3iv; in this solution his sections are immersed for half an hour, or until they have become of a "deep purplish-crimson." The staining fluid is then poured off, and without any washing at all, a saturated solution of oxalic acid, in *water*, is placed in the dish and changes the colour of the sections to a bright scarlet. As soon as it has done so thoroughly, it is poured off, and a little fresh solution is added. In this the sections are allowed to steep till the colour is discharged from all but the cellular or protoplasmic elements of the tissue. The sections are then washed with water to remove the excess of oxalic acid transferred to alcohol, to be finally mounted in the ordinary manner. The author thus avoids the great waste of alcohol which occurs in the ordinary method of using oxalic acid.

Dr. FRANCIS DELAFIELD, of New York, presented a paper on "General Syphilitic Inflammation of the Eye." Localized inflammation of the eye—as, for example, inflammations of the iris and ciliary body—are familiar to most practitioners of medicine; "in rare cases, however, the inflammation becomes general; iris, choroid, ciliary body, retina, sclera, and cornea become involved, and the production of new cells is so great that staphylomatous tumours of large size are formed." Dr. Delafield gives a minute description of two such cases, both occurring in young negroes, and quotes from ophthalmic literature a similar case of Hippel, and two mentioned by Arlt.

A paper on "The Halo round the Macula Lutea," by EDWARD G.

LORING, M.D., of New York, follows. It is well known to all who have given much time to the study of the ophthalmoscopic appearances of the eye-ground, that the macula lutea usually presents itself in the upright image as an irregular yellowish spot (often triangular), surrounded by a darkly pigmented brownish border; while the same region of the eye-ground, viewed with the inverted image, shows us an ovoid brownish spot—its long diameter horizontal, surrounded by a more or less brilliant silvery rim. To explain these appearances, Dr. Loring resorts to the following ingenious hypothesis and experiment. Starting with Shultze's diagram of the region of the yellow spot, he assumes a depression throughout its whole extent, and reasons as follows: "As you will see figured on the diagram, this whole region bears in its formation a strong resemblance to a shallow cup, of which the rim is represented by a convex, the bowl by a concave surface. If we look upon these curved surfaces as mirrors, they would each have their foci: one lying behind, the other in front, according to their respective degrees of curvature. And if light should be thrown perpendicularly against such a combination of curves, the apex of the outside rim, or convex surface, would, from well-known optical laws, appear illuminated; while the inside, or concave surface, would appear more or less in shadow. Thus we would have the effect of a darker centre surrounded by an illuminated edge." By an ingenious experiment with eye phantoms, Dr. Loring shows that in any concave metal mirror, a depression of $\frac{1}{700}$ of an inch is sufficient to produce such an appearance.

To the best of the knowledge of the reviewer, no such depression has ever been demonstrated in the retina, except in the fovea centralis, and this is too small to produce such a reflex. Dr. Loring, in his paper, fully recognizes the force of this objection; but after stating most truly the extreme difficulties which beset the anatomist in any attempt to study accurately the distribution and relation of the retinal elements at this point, asks: "Under these circumstances, may not the ophthalmoscope have a voice in explaining a phenomenon which is in strict accordance with physical laws, and which outside of the eye can only be so explained?"

The next article is by HENRY D. NOYES, M.D., of New York, and is entitled, "A Scheme to Aid in Examining and Recording Cases of Functional Trouble of the Eye." After giving his blank form and explaining its method of use, Dr. Noyes remarks as follows on the method of measuring abduction and adduction at the ordinary reading distance: "The Test Object for adductive power, which has in my practice displaced all others, is a white dot and a line painted on a black card. The dot and line are of this form ! . I prefer this to either the dot above, or to the dot with the line both above and below. The line, as I make it, enables the patient to tell whether the false and true images are really perpendicular. By having it only on one side and short, the prism being 10° or 12° , the images are always apart from each other, and the patient is not tempted to put forth efforts at fusion of the images, which I have noticed to occur when the prolonged line of one image overlaps the other. A white image on a black surface is more conspicuous than black on white; and when a red glass is put before one eye, the difference in the new images is instantly recognized.

Dr. O. F. WADSWORTH, of Boston, Mass., furnishes some remarks "On

the Tables given by Loring and Knapp to show the Displacement of the Retina in Ametropia." These tables being of practical use, in order to enable us to determine the elevation of various parts of the fundus in cases of intraocular tumours or of choked disk, as well as the amount of depression of the nerve in cases of glaucoma, Dr. Wadsworth has done the profession good service by analyzing the formulæ by which they were calculated, and showing that with the exception of a slight error in each table, the formulæ are really convertible, and "must, therefore, from the same premises give the same results."

The apparent discrepancy arises from the fact that Loring (following Mauthner) has calculated the total amount of displacement in certain degrees of ametropia, while Knapp shows the amount of displacement in degrees of ametropia which are corrected by a lens of given focal distance placed at the anterior principal focus of the eye. The anterior principal focus of the eye (both using Listing's schematic eye as a basis), is 20.29 millimetres (almost exactly $\frac{3}{4}$ "), in front of the second nodal point; and we must, therefore, in cases of hypermetropia, subtract three-fourths from the numbers of the glasses given by Knapp; and in cases of myopia, add three-fourths to obtain the true degree of ametropia. The slight difference still remaining is explained by the fact that Loring estimated degrees of myopia from the first nodal point; and degrees of hypermetropia from the second: while Knapp estimated degrees of myopia and hypermetropia both from the second nodal point.

Dr. G. HAY, of Boston, describes a "Variety of Forms of Small Pencils of Astigmatic Rays." This short and purely mathematical paper is in itself so condensed that it is impossible to present our readers with any satisfactory abstract of it, and we must, therefore, refer those interested in the subject matter to the original.

Dr. RUSSEL MURDOCH, of Baltimore, Md., calls attention to "The Retina an Asymmetrical Surface." In this somewhat lengthy paper, the author endeavours to show that astigmatism due to want of symmetry of the cornea may be compensated by a corresponding but opposite want of symmetry in the retina, "by the opposition of a concave cylindrical element to a convex" one.

To this view of the subject, Dr. Hay took exception at the meeting, and at the request of the Society, his views were committed to writing, and communicated to Dr. Murdoch, who was not present at the meeting, his paper having been read by Dr. Agnew. Dr. Hay's objection is essentially as follows:—

"According to my notion of the matter, if an astigmatism existed in consequence of an asymmetry of the cornea, then a pencil of rays proceeding from a *single point* of the object, say the point looked at, would, when arrived in the vitreous, be an astigmatic pencil. From such an astigmatic pencil which has no point focus, the retina could not receive a point impression, but only an impression extending over a certain surface, or a linear-shaped impression; and this although the pencil proceeded from a single point of the object. This being the case, even if the retina became asymmetrical, it could not reduce to a point impression the surface impression, or the line impression made by the astigmatic pencil; that is, it could not correct the astigmatism. The impression on the retina would not be materially altered by the proposed change of shape of the retina."

Dr. GEO. STRAWBRIDGE, of Philadelphia, describes "An additional

Method for the Determination of Astigmatism." Dr. Strawbridge, fully recognizing the admitted fact that a minute point of light is the most delicate test for astigmatism, and having found (as have also previously Green and Thomson) that an illuminated bar is a more sensitive test than the usual black bar upon a white ground, has given us a useful additional method of determining astigmatism. This is based on the well-known experiment described at page 101 of *Helmholtz Physiologische Optik*, Leipzig, 1867, and on the additional remarks on the same subject, at pp. 138 and 139.

Dr. S. describes his method as follows:—

"In the centre of a Bristol board, a round aperture of thirteen millimetres in diameter is cut, and at a distance from the aperture of six centimetres, radiate bars cut in the Bristol board, having a length of nine centimetres, and width of five millimetres, and forming an angle with each other of ten degrees. Over this figure white gauze paper is passed, a lamp placed behind illuminates it in its entire extent. The patient is placed at a distance of 20' from the figure, and requested to observe the round central opening, and to notice in what direction it is most elongated. This is readily determined by observing to which of the bars in the figure the light prolongation most closely corresponds in its direction, and the result will be controlled as to accuracy, by seeing which of the bars are most distinctly seen. For example, in a case of myopic astigmatism in the vertical meridian, it would be found that the light elongation would be upward and downward, and at the same time the vertical bar would be most distinctly seen.

"By this procedure the direction of the vertical meridian is discovered. The next step is to determine the refraction of this meridian. To this end a diaphragm is advanced in the direction of the greatest elongation of the round light (suppose it to be vertical, and that the diaphragm moves from above downward), and the patient is requested to notice whether the upper half of the round light first disappears, or the lower half; if the upper half is first gone, the meridian is shown to be so curved as to cause a myopia to exist; while if the lower half of the round light is first to disappear, we conclude that a hypermetropia exists. If the entire round light is found to disappear at once, it may be concluded that very little astigmatism exists. The direction of the meridians being now known, as well as their refraction, whether normal or so curved as to cause a myopia or hypermetropia, the next step would be to determine exactly the amount of abnormality. To this end we proceed with spherical glasses, determining the exact one necessary to see distinctly the proper bar, as in the method laid down by Snellen."

JOHN GREEN, M.D., of St. Louis, Mo., calls attention to "Astigmatism as an active cause of Myopia," and the great frequency of astigmatism in myopes. Analyzing with this view the tables previously published by Snellen and himself, Dr. Green argues that astigmatism is a frequent and active cause of myopia, because, owing to the indistinct image formed in the retina, there is a tendency to approach the book so as to obtain larger images, and thus read with high degrees of convergence, and with a strong exercise of the accommodation.

"Remarks on Cataract" is the title of a paper by E. G. LORING, M.D., of New York. Recognizing the frequency of astigmatism after operations for cataract, and having found that the necessary sphero-cylindric glass is "so heavy, and of so awkward a shape as only to be worn with great discomfort by the patient," Dr. L. proposes to obtain its advantages in a lighter and more comely form, by grinding the spherical glass plano-convex, and by cementing to its centre, by Canada balsam, a smaller cylindroid glass of a diameter corresponding to the smaller diameter of an ovoid spectacle frame. According to Dr. L.'s experience, such

glasses bear any reasonable amount of rough treatment without coming apart.

The second part of the paper is devoted to the statistics of cataract operations, and shows by a comparison of the statistics of the flap and periphtric linear operation, that the percentage of success in each is more nearly balanced than most are disposed to admit.

We quite agree with Dr. Loring in thinking the standard now used by most operators, including $V = \frac{1}{10}$, among the "perfect results," to be too low; moreover, until, in publishing cataract statistics, the acuity of vision in each case is determined separately (as given by the use of the Snellen tables), and all results from normal acuity of vision to $V = \frac{1}{10}$ are no longer lumped together as "perfect results," it will be almost impossible to derive any accurate information as to the experience of different operators, or as to the comparative merits of different methods of operating. We think, however, that Dr. L., in his estimate, entirely overlooks the great advantages offered by the periphtric linear section, owing to the diminished confinement to bed, and the shorter stay in hospital required by those who are operated on by this method, and also the lessened liability to accident (such as bursting open of the wound) on the part of restless or delirious patients, especially such as, not being operated on in hospital, are less under the control and supervision of the surgeon. Inasmuch, however, as we have given a comparative estimate of the advantages of the new and old operations, and also of the necessary length of after-treatment, together with the most noteworthy statistics on the subject, in the January number of this Journal for 1871, we deem it unnecessary to enlarge further on this point.

Dr. HENRY D. NOYES, of New York, describes "An Apparatus for testing the Perception of Colour." This consists of a convenient revolving disk, so arranged that only one colour is at a time presented to the eye. It is ingenious, and much shortens the time necessary for making such observations.

Dr. GEO. STRAWBRIDGE, of Philadelphia, describes a Jaeger Ophthalmoscope as modified by himself. The changes introduced by Dr. S. in this instrument, consist in replacing the fixed handle by a folding one, and by adding at the back of the instrument, three revolving disks, carrying twenty correction glasses, thus obviating the trouble of resorting to a test set for appropriate glasses, and rendering the instrument a more portable one. The disks are on the principle of those long since used by Rekoss of Königsberg, and more lately by Dr. Loring, of New York, in his admirable ophthalmoscope. To the latter, Dr. S. acknowledges his indebtedness for the idea. Like the original instrument of Jaeger, this modification has the advantage of the strong and weak light mirrors, also that the correction glasses remain stationary when the mirror is placed at any given angle, and thus avoid any distortion of the images by prismatic action.

W. W. KEEN, M.D., and WM. THOMSON, M.D., relate a case of "Gunshot Wound of the Brain followed by Fungus Cerebri and Recovery, with Hemiplegia." The extremely interesting case whose clinical history is here carefully detailed, is particularly interesting from the extremely minute investigation of the field of vision. The patient possessed full acuity of vision, and was very intelligent, and the authors believe that they have proved that "at the *point of fixation*, the vertical line which bisected the field seemed to deviate slightly to the defective

side." If this be granted, then not only is the yellow spot the optical centre of the eye, but it alone is supplied throughout its entire extent by a double set of nerve fibres, one coming from each cerebral hemisphere.

H. D. NOYES, of New York, gives an account of a case of "Detachment of the Retina with Laceration at the Macula Lutea." This remarkable lesion was examined conjointly both by Drs. Noyes and Delafield, and both agreed as to the interpretation of the appearances in the region of the yellow spot. Dr. N. remarks that it differed from any other retinal rent that he had seen, in its being round and with smooth edges, as if "it might have been cut out with scissors or made with a punch." The eye had been struck by the cork of an ale bottle three years previously, and the sight was lost immediately. Externally it appeared normal, except a slight divergence. There had been no subsequent inflammation, and at date of examination only an obtuse perception of light.

Dr. B. JOY JEFFRIES, of Boston, gives a "Report of Passavant Operations with and without Ether, and also under Nitrous Oxide." The author last year communicated to the Society a report of thirteen operations for breaking up posterior synechiæ after the manner proposed by Dr. Passavant. He reports now an additional series of seven cases, and says "that in these seven cases, as in the thirteen operations previously reported, I did no harm to the capsule and certainly improved the condition of the eye." "Instead of an iridectomy knife, I now use a broad paracentesis needle. I find no difficulty in manipulating my delicate iris forceps in the corneal wound this makes, and I lose but little aqueous before the iris is grasped, when the escape of fluid rather assists in breaking the attachment. Atropia is continued, and the humour secretes so quickly that there is no time for the iris to fasten itself again to the capsule. I have occasionally succeeded in not losing all the aqueous humour during the operation."

Dr. Jeffries has found nitrous oxide preferable to any other anæsthetic for this or any "short" operation.

Dr. JOHN GREEN, of St. Louis, Mo., describes a case of "Readjustment of the Levator Muscle of the Upper Lid." The subject of it was a boy five years of age, who was gored by a bull, and the whole upper eyelid torn from its attachment, with the exception of a narrow bridge at its outer end. When seen by Dr. G. two years subsequently, there was accurate union of the skin and complete ptosis. The eye itself was wholly uninjured. Believing the case to be one of complete detachment of the tendon of the levator, Dr. Green decided to operate, and proceeded as follows: "An incision of rather more than an inch in length was made through the skin along the upper border of the lid, and the dissection extended through the subcutaneous fatty tissue in a direction nearly backward, so as to avoid opening the conjunctival sac. The upper surface of the eyeball was thus reached without having encountered any fibres of the orbicularis muscle, or in fact any other tissue than subcutaneous fat, which was apparently continuous with the fat of the orbit. A broad, thin tendon was seen spread out over the exposed part of the globe, which proved to be the tendon of the superior rectus. Between this and the roof of the orbit the tendon of the levator was easily discovered, and no difficulty experienced in uniting it by three sutures to the front of the tarsal cartilage. The wound was then closed by three other sutures, leaving the ends of the three deep sutures protruding externally. The subsequent swelling was moderate, the external wound healed promptly without sup-

puration. The superficial sutures were removed on the fourth day, and the deep sutures left to become detached spontaneously."

Two months later the boy could open and shut his eye simultaneously with the other.

The same author gives an "Additional Note upon the Use of Atropia in the Treatment of Incipient Strabismus." Dr. Green here refers to his paper on this subject in the "Transactions of 1870," and gives his conclusions based on another year's experience. They are: 1st. That in commencing squint paralysis of the accommodation by atropia "leads to a speedy abandonment of the habit of squinting. 2d. That the artificial amblyopia thus produced supplies a needed motive for accepting convex glasses. 3d. That by repeated instillations the habit may be effectually broken up and the case at last brought under the control of convex glasses; the length of treatment necessary to obtain this result varying from one month to upwards of a year, according to the previous duration of the squint. 4th. That such results have been obtained in cases of periodic squint of fully three years' standing. 5th. That in cases of permanent deviation where the visual axes, even in a state of rest, do not become parallel, the position of the eyes is nevertheless improved, and that we have, in the degree of remaining squint, an indication of the extent of the correction to be sought from tenotomy.

The three last papers are entitled: "Paralysis of the Trigemini, followed by Sloughing of the Cornea," by Wm. F. Norris, M.D., of Philada. (*Vide* January number of this Journal.)

"A Case of Congenital Fissure of the Lids," by W. W. Seely, M.D., of Cincinnati.

"Congenital Absence of both Eyeballs," two Cases, by Dr. George Strawbridge, of Philadelphia.

For a detailed account of the "Freaks of Development," described in the last two papers, we must refer our readers to the articles themselves.

W. F. N.

ART. XVII.—*A Practical Treatise on Diseases of Women.* By T. GAILLARD THOMAS, M.D., Professor of Obstetrics and Diseases of Women and Children in the College of Physicians and Surgeons, New York; Attending Surgeon to the New York State Woman's Hospital, &c. &c. Third Edition, enlarged and thoroughly revised, with two hundred and forty-six illustrations on wood. Philadelphia: Henry C. Lea, 1872.

SIR Henry Holland, whose recent work¹ all doctors can make themselves wiser and better by reading, remarks that in his several visits to the United States, he has been consulted by patients to whom it was a pleasant office to render aid in return for the many kindnesses he had received in this country; but that really such aid was little needed "where both the principles and practice of medicine are derived from schools of instruction, and a medical literature in no wise inferior to our own." Such a tribute to American medical colleges and American medical literature, coming from one whose intelligence, wisdom, honesty, and opportunity cannot be doubted, is indeed worthy of grateful appreciation by all American physicians.

¹ *Recollections of Past Life.*

We could not but be struck with the justice of Dr. Holland's statement so far as it relates to one department of our literature, in examining the third edition of Professor Thomas's well-known work on *Diseases of Women*. Its able author need not fear comparison between it and any similar work in the English language; nay more, as a text-book for students and as a guide for practitioners, we believe it is unequalled. In the libraries of reading physicians we meet with it oftener than any other treatise on diseases of women, and the demand for it, which has rendered necessary the issuing of a third edition within four years after the publication of the first, testifies the general approval of it by the profession.

We do not propose an extended review of this volume; when the first edition appeared, its general features and character were presented¹ in detail; but the work has undergone numerous changes, both alterations and additions, and is very far from being a reprint, and therefore demands a fuller notice than would otherwise be proper; besides, we wish to qualify and discriminate somewhat in the commendation justly due it.

The first chapter, *Historical Sketch of Gynæcology*, is somewhat fuller than in previous editions, while the second, *The Etiology of Uterine Diseases* is scarcely altered; the third, *Diagnosis of the Diseases of the Female Genital Organs*, like the first, has undergone both increase and improvement: especially do we wish to commend in it the rules given as to the use of *tents*, rules for preventing, so far as human foresight can prevent, the mischievous consequences which may result from these oftentimes valuable means of diagnosis. Among the specula described, we miss any reference to Dr. Meadows's instrument, which is certainly compact, portable, neat, convenient, and in some cases will be found quite useful.

The fourth chapter, *Diseases of the Vulva*, is but slightly altered; a valuable addition, however, has been made to it in a consideration of *hydrocele*.

Dr. Thomas asserts, in accordance with the statement of most authorities, that the fibres of the vaginal sphincter inosculate with those of the anal sphincter, making a figure 8, an assertion which is not in accordance with the teaching of Dr. Savage.²

Under the head of *inflammation of the vulvo-vaginal gland*, the usual duration of the disease is said to be from two to three weeks. With all deference to Dr. Thomas's large experience and accuracy of knowledge, we believe that suppuration, which is the rule in the great majority of cases where the symptoms are so urgent that professional aid is sought, generally occurs within a week, or ten days at most.

In considering *pudendal hemorrhage*, Dr. Thomas gives a plan of treatment, and adds, "It is difficult to conceive of any case occurring in the non-pregnant woman, which could resist this method if effectually employed." Certainly the difficulty of the conception must be obvious.

Pruritus vulvæ is well discussed, both in its etiology and therapeutics. There are two plans of treatment, however, directed to the pruritus especially, which we have sometimes found so useful that we are constrained to mention them: the one is by fomentation with hot water—as hot as the patient can bear it; the other is by applying patent lint, dipped in a solution³ containing ten grains of carbolic acid, eight of

¹ American Journal of Medical Sciences, July, 1868.

² Anatomy of the Female Pelvic Organs.

³ The formula is taken from Dr. Atthill's Lectures on Diseases of Women, Dublin, 1871.

acetate of morphia, two drachms of dilute hydrocyanic acid, four drachms of glycerine, adding sufficient water to make four ounces.

Rupture of the perineum is the subject of the fifth chapter. Dr. Thomas states that all cases of this accident may be classed under four heads:—

“1st, superficial rupture of the fourchette and perineum, not involving the sphincters; 2d, rupture to the sphincter ani; 3d, rupture through the sphincter ani; 4th, rupture through the sphincter ani, and involving the recto-vaginal septum.” Where would *central* rupture be placed? We much prefer dividing these accidents as follows: *partial*, *complete*, *central*, and *complicated*. A simple rupture of the fourchette—or *posterior commissure*, we would prefer calling it, and banishing the former term—need not give the accoucheur or the surgeon any special anxiety, and is hardly worthy of consideration.

Three circumstances are mentioned as militating against the success of *immediate* operations for ruptured perineum, viz., the inexperience of the operator, consequent hurry, &c., the contact of the lochial discharge, or of dribbling urine, with the surfaces which are brought in apposition. But to our mind, the most important one is omitted, viz., the *bruised* condition of the tissues and the lacerated wound.

Vaginismus, chapter sixth, has two more pages than in the second edition. Dr. Thomas states, in reference to Sims's operation, that there is a growing distrust in the minds of many gynæcologists as to the necessity of resorting to a procedure which is reported in one case to have resulted in fatal hemorrhage. He also quotes Scanzoni and Tilt as condemning the surgical treatment of this affection. The author still holds to his recommendation of *ethereal copulation* in certain cases. Now, we should be glad to know how many vaginismic wives have been cured, how many ether-begotten children have been born, in the four years this recommendation has been before the profession. Surely *mechanical impregnation* might be advocated on precisely the same ground as anæsthetizing a wife in the hope that complete connection, then accomplished, “may result in pregnancy”! A small uterine syringe could be readily introduced into a vagina whose portals would be closed to a larger body, and its homuncular contents, legitimately obtained in a way more easily imagined than described, discharged into the uterine cavity; though this sort of man-planting might lead some new Uncle Toby to ask, in his bachelor innocence, are children not born, but begotten with a squirt?

The seventh chapter, which is upon *vaginitis*, calls for no special remarks, except that we hope no one will imitate Dr. Thomas in using the word *acuity*; according to our American authority the word is dead, and we are sorry to see that so excellent and accurate a writer as Dr. Thomas is trying to resuscitate it. Another word, by the way, which is a favourite with Dr. Thomas, but which to our mind is exceedingly unpleasant, is *fornix*.¹ Why not plainly say arch or roof; and if necessary to specify a particular part of this vaginal roof, describe as anterior, posterior, right lateral, or left lateral cul-de-sac?

¹ It should be borne in mind that this word also means a *brothel*—it is thus used by many of the ancient authors, Juvenal and Horace among others—and from it we have fornication, &c. We believe its use signifying the vaginal roof unnecessary if not unfit—we hope we shall not again meet with vaginal brothel in any of our professional classics.

Atresia vaginæ, the subject of the eighth chapter, is excellently considered; so too are *Prolapsus Vaginæ* and *Vaginal Herniæ* in the ninth chapter.

The tenth chapter is upon *Fistulæ of the Female Genital Organs*. In the author's description of the operation for vesico-vaginal fistula, we do not think sufficient prominence is given to scissors as every way preferable to the knife for denuding the fistulous margins; true, we are treated to a cut, fig. 40, of scissors that, it is said, may be used for this purpose, but the same scissors make their appearance, fig. 220, for amputation of the neck of the womb! We should be very glad to see Dr. Emmet's two forms of scissors represented. We do not believe Dr. Thomas, with all his genius and skill, and he has such most richly granted him, would attempt the operation with the scissors which he has delineated on page 184. So, too, Emmet's *conical* needle is, in our opinion, much better than any of which representations are given.

Under the head of *urinary fistulæ requiring special treatment*, the author considers, among other forms, *uretero-vaginal fistula*, but merely as "the condition" remaining after an operation for vesico-vaginal fistula, performed at Hôtel-Dieu by our distinguished countryman, Dr. Bozeman: the case is unnecessarily detailed, and not a word exists as to any other examples of this lesion existing independently of a vesico-vaginal fistula, cured or uncured, nor a word as to its treatment. Nearly five years ago the writer published a case¹ of this injury manifested after parturition, and it, the sole and primary lesion, after having existed for sixteen years, was successfully operated on.

Chapter twelfth, *General Considerations upon Uterine Pathology and Treatment*, is at least a third longer than the corresponding chapter in a previous edition: it is the best and clearest discussion of vexed topics, in so brief a space, that we have ever read.

With the thirteenth chapter the author enters upon the consideration of uterine diseases proper; but at the twenty-fourth chapter—prior to the consideration of the disorders of menstruation—the author *goes off*, shall we say?, to discourse on *perimetritis* in its different forms; viz.,

¹ This case was reported in the *Western Journal of Medicine*, October, 1867, and was translated and republished in the *Medicinisches Correspondenz-Blatt des Württembergischen ärztlichen Vereins*. Undoubtedly, it was the first case of the kind ever reported in this country—probably the first ever reported anywhere. Dr. Freund, of Breslau, states that but three cases of this kind have ever been observed. (*Journal of the Boston Gynecological Society*, January, 1872.) Deroubaix, in his works upon *genito-urinary fistulæ*, Brussels, 1870, gives the details of a post-mortem of a patient dying at forty-one years, who had a congenital uretero-vaginal fistula: but of course this does not militate against our statement as to the case under our charge; to wit, that this uretero-vaginal fistula was the first recorded where this was the *sole* and *primary* lesion.

Simon has met with this accident once or twice; and so unsatisfactory, we presume, was his treatment, he makes uretero-vaginal fistula one of his eight indications for *kolpokleisis*. Our impression is, but of this we will by no means be positive, that Simon's first published reference to this form of fistula was in 1868.

Duclout, writing in 1869, *Gazette Médicale*, p. 170, recommends essentially the very plan which we had successfully executed two years before.

The writer does not claim to be that most troublesome and unhappy of creatures, the man with a grievance; nevertheless, it seemed to be due himself, as well as due professional science, when the leading American author on diseases of women ignored uretero-vaginal fistula except as an occasional consequence of an operation for vesico-vaginal fistula, to point out the error.

pelvic cellulitis and *pelvic peritonitis*, and one of the occasional consequences, viz., *pelvic abscess*: then *pelvic hæmatocele*, which is one of the causes of *pelvic peritonitis*, is discussed.

In the twenty-eighth chapter he returns to uterine diseases, and we have chapters successively devoted to *uterine fibroids*,¹ *fibro-cysts*, *polypi*, *cancer*, *cancroid*, *cancer of the body of the uterus*, *recurrent fibroid*; then a chapter in which *uterine moles*, *uterine hydatids*, *superinvolution*, and *subinvolution* of the uterus are presented, a single chapter for these very dissimilar conditions, while there are three chapters for the discussion of cancer—which, in its different locations and forms, yet has one common tendency. Then the author gives us disorders of menstruation, metrorrhagia, sterility, and leucorrhœa under a general heading, “*On some of the most important results of uterine disease.*”

Now, so far as it concerns disorders of menstruation, are they not, at the starting-point, frequently the *causes* of uterine disease, though afterwards the uterine disease may complicate and perpetuate them? And is not a pathology which founds menstrual derangements upon uterine diseases in danger of resulting in therapeutics that might be too exclusively local, on the part of some practitioners at least? Possibly, most physicians would assert that they find very many, if not a majority, of the cases of menstrual disorder they are called to treat, dependent upon constitutional condition, upon ovarian disease, &c., rather than upon uterine.

We desire also to say a word as to Dr. Thomas's classification. Richter, we believe, has declared every man has a right to his own style of composition, as much as he has to his own nose; and so we judge our author, whose rare abilities we sufficiently admire, may classify uterine diseases according to such plan as he thinks best. But is it the best—the most philosophic, and fixing itself most readily and permanently in the mind of the student? We certainly think not; however, it would require many details, occupying too much space, to give our reasons for this negative opinion. We beg those who think “the king can do no wrong,” to contrast Dr. Thomas's classification with that of the late Dr. H. G. Wright;² Dr. Wright divides uterine disorders into those of *place*, *function*, and *structure*; those of the latter being subdivided into *cacoplasia*, *heteroplasia*, *hyperplasia*, and *aplasia*.

Returning from this digression, we shall make but two or three remarks upon the chapters included between the thirteenth and the twenty-fourth. The author has substituted *areolar hyperplasia* for *chronic corporeal metritis*, and the chapter devoted to its discussion is one of the longest and most valuable in the volume.

In discussing *versions of the uterus*, we are shown a new pessary of his own, and also a modification of Cntter's pessary—certainly the modification is a great improvement. Dr. Thomas speaks very highly of Dr.

¹ In the chapter devoted to the consideration of those tumours hitherto known as uterine fibroids, Dr. Thomas uses the term *myo-fibromata*, asserting that neither *fibroid* nor *myoma* expresses their true character, but that being composed of both muscular and fibrous tissue, the designation which he has given is the correct one. Will he allow us to call his attention to the article *Fibrome ou Tumeurs Fibreuses*, by Heurtaux (*Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques*, tome quatorzième, p. 675), in which, it seems to us, the argument in favour of *myomata* as the proper term for these uterine tumours, is conclusive.

² Uterine Disorders. London, 1867.

Albert H. Smith's pessary. Judging from the wood-cut which is given, this pessary differs very little, if at all, from one of the many forms of pessary used by the late Sir James Simpson.

Under the head of *inversion of the uterus*, the author discusses *abdominal section as a substitute for amputation*, reporting two cases where such section was made, and the inversion, which had baffled all other means, readily reduced after intra-abdominal dilatation of the cervical ring. One patient recovered entirely, in a year became pregnant, and in the eighth month of pregnancy died suddenly with symptoms of cholera morbus, after eating some canned oysters; the other patient did well for forty-eight hours, and then peritonitis occurred, rapidly proving fatal.

Chapters upon the *Diseases of the Ovaries, &c.*, and of the *Fallopian Tubes* follow those on uterine diseases, while the volume concludes with a chapter upon *chlorosis*.

Of course *ovariotomy* is fully considered, both as to the statistics, and as to the method of its performance.

Dr. Thomas, in referring to the former, remarks: "The time has passed when in an essay upon this subject the question need be discussed as to the propriety of recognizing ovariotomy as a legitimate resource in surgery." What a contrast between these words and those uttered only twelve years ago by one of the most celebrated and able of American physicians, Dr. Charles A. Lee, whose recent death we greatly deplore! "On the whole the conclusion appears to us irresistible, that the extirpation of an ovarian cyst is, in every view of the subject, unjustifiable, and should be abandoned."¹

American surgeons have contributed to establish ovariotomy upon a firm basis of professional and popular confidence. Not only is the operation American by virtue of its having been first performed by Dr. Ephraim McDowell, of Kentucky, but to-day the two operators who have had the largest percentage of successful cases are Americans—the late Dr. Bradford, of Kentucky, and Dr. Marion Sims, the former having twenty-eight recoveries in thirty-one operations; the latter ten recoveries in eleven.

Nevertheless, such success is so far above the average, that it ought not to be taken as the basis for the probabilities of cure in a given case, nor as the term of comparison by which individual operations are to be judged.

As to the period at which the operation should be undertaken, the author lays down the following general rule: "If a small cyst be discovered which is removable by the vagina, it should be removed as soon as possible, while one too large for this should be interfered with when it is evident that the patient is failing in strength, and becoming emaciated, depressed, and nervous."

Dr. Thomas states that during the last eight months he has performed ovariotomy eight times, with six recoveries and two deaths. Dr. Atthill remarks, *op. cit.*, p. 135, in reference to this operation, "still making every allowance for improved diagnosis, and for greater care in the selection of cases, I do not think we can hope to raise the percentage of recoveries permanently above sixty-five per cent." Mr. Hutchinson² thinks that the average mortality in most operations is not less than fifty per cent.; that

¹ Copland's Dictionary (American edition), vol. i. p. 749.

² Holmes's System of Surgery, vol. v. p. 62.

in practised hands two recoveries to one death is a proportion which may be confidently expected, and that perhaps we may even very considerably improve on this. It will be observed that Dr. Thomas's recent operations show the very satisfactory result of three recoveries to one death. One of the most important questions in this operation is in reference to the treatment of the pedicle, and no less than eleven¹ different methods are mentioned, the last being Dr. Emmet's, viz., using silver wire passed repeatedly through the pedicle by the cobbler's stitch. Few men can manipulate silver wire and needles with the facility and celerity of Dr. Emmet; certainly most operators will find double-stitching with silver wire a broad, thick pedicle somewhat tedious if not difficult—we have tried it twice, and we are satisfied that it is so.

Dr. Thomas narrates an interesting case of *vaginal ovariectomy* successfully performed by himself;² it being the only case he has met with in which he felt justified in resorting to this procedure. In speaking of the operation, he says, that "in certain rare cases in which a tumour not larger than the head of a child a year old falls down into Douglas's *cul-de-sac*, it will be possible to cut through the vagina, seize the sac, draw it down, ligate the pedicle, and return the stump to the abdomen. If this can be done, a great deal of risk will be avoided, and the patient spared a lengthy period of suspense, with the prospect of a serious capital operation at the end."

Dr. Thomas does not believe that the scope of this plan of performing ovariectomy will ever be very great, but thinks that in cysts of small size, which are unattached, it will offer a valuable resource for the avoidance of years of mental suffering while the disease is progressing, and of the capital operation of abdominal ovariectomy in the end with all its attendant dangers and uncertainties.

One chapter we hoped to see in this edition, but are disappointed; and the disappointment is not ours only, but will be shared by the hundreds of physicians who read this book—a chapter treating of *diseases of the female bladder and urethra* would be prized most highly, and is greatly needed. How happens it such diseases are utterly neglected, or most briefly and unsatisfactorily considered, in our standard works on diseases of women?

A well-prepared monograph upon these maladies undoubtedly would meet with great success.

We conclude our brief review by repeating the hearty commendation of this volume given when we commenced: if either student or practitioner can get but one book on diseases of women, that book should be "Thomas." T. P.

¹ A twelfth might have been brought forward—dividing the pedicle by twisting with strong clamps, or forceps, the torsion of the vessels thus made securing against hemorrhage, a plan which has been devised and successfully executed by an eminent Glasgow surgeon.

² For report of this case, see No. of this Journal for April, 1870, page 387.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XVIII.—*First Biennial Report of the Board of State Commissioners of Public Charities of the State of Illinois.* Presented to the Governor, Dec. 1870.

THE Legislature of Illinois, during the session preceding the presentation of this Report, voted an appropriation for largely increasing the means of accommodation for the insane. Desirous of ascertaining and adopting the best plan for the management of this class, the Board called a conference of State officers, officers and trustees of insane asylums, and others, to discuss the whole subject. At this meeting letters were read from most of the superintendents of insane hospitals in this country, responding to questions previously addressed them, as to the comparative merits of the so-called "congregate" and "segregate" systems. While the writers generally distrusted and disapproved the latter and newer plan, most of the gentlemen present at the conference approved and desired to have it tried.

Without designing to follow the discussion on that particular occasion, it may not be unprofitable to examine into the claims somewhat confidently put forth by the advocates of a new method of maintaining and caring for the insane.

During the last ten or twelve years there has appeared, in various directions, a spirit of dissatisfaction with the manner in which our insane are managed. We do not now refer to the vulgar suspicion and distrust which fancies every hospital a "Bastile,"—to use the pet word of the sensation reporters. We refer to a feeling among cultivated people, philanthropists, officers of State governments, and even among physicians, that the prevailing method of massing together the curable and incurable, quiet and boisterous, harmless and dangerous, idle and industrious, in one large building, is not the best one for the interest either of States or of patients. Two points especially are insisted on by the would-be reformers: First, the alleged excessive and needless cost of the great asylums, in erection and in maintenance; Second, the restriction of the patient's personal liberty, to a degree not required by his condition, and consequently, just so far a violation of his rights, and often an obstacle to his recovery or improvement.

To remedy these alleged evils various plans have been proposed. In nearly all of these the germinal idea has been derived from the sort of family-life of the insane with their keepers, in the ancient Belgian colony of Gheel. It will, therefore, be proper to glance at the facts as to the condition of the insane at this place. The history, and the more obvious outward aspects, of the village are familiar to all, from the descriptions of countless tourists. Notwithstanding the generally laudatory and rose-coloured views given us by curious and unprofessional travellers, scarcely any one, at least among those practically acquainted with insanity, now believes an American or an English Gheel to be practicable, whether desirable or not. Until within a few years the published accounts of Gheel have been the superficial impressions of unscientific tourists,

more desirous to tell a marvellous story than to ascertain and present the true merits of the system. The facts that the cases there treated were carefully selected ones, and that even of these the condition and treatment were by no means altogether satisfactory, were totally ignored. During the last ten or fifteen years, however, Gheel has been examined by many English and American alienists, bringing to their observation a thorough, practical acquaintance with the insane, and a sincere desire to ascertain the real value of the system. Drs. Henry Stevens, of St. Luke's, London, and John Sibbald, of the Royal Edinburgh Asylum, made their visits to Gheel the subject of articles in the *Journal of Mental Science*.¹ Dr. J. B. Tuke also, in a paper in the same journal² on "The Cottage System of Management of Lunatics as practised in Scotland; and Suggestions for its Elaboration and Improvement," incidentally speaks very strongly of his personal knowledge of the faults and imperfections of the Gheel colony. Several gentlemen from this country, prominent in asylum management, including Dr. John E. Tyler, late of the McLean Asylum, and Dr. Pliny Earle, of the Northampton State Lunatic Asylum, have borne strong testimony to the wretched and inadequate character of the provision there made for the patients.³ Whatever may have been the fact years ago, at present, Dr. Tuke tells us, the rules of the colony exclude all "suicidal, homicidal, and incendiary lunatics," and "those who require continual restraint or coercion;" also "those *whose escapes shall be frequent*, or whose disease infringes public peace or decency." Even with this selection of cases, out of eight hundred patients, one hundred are, of late years at least, confined in a central hospital of the ordinary congregate sort; and from fifty to seventy others are subjected to mechanical restraint—principally by "hobbling," as is done with cattle to prevent too free a use of the legs. The other gentlemen named, visiting the colony independently and at intervals of some years, report essentially the same facts. Dr. Stevens and Dr. Sibbald distinctly intimate that the Gheel lunatics are not prevented from indulging in filthy and vicious habits to an extent impossible in a well-ordered hospital. The latter points out the absence of the means necessary to secure cleanliness of persons, clothes, and bedding. The former noticed that the liberty allowed certain demented patients was abused in a manner impossible under asylum supervision. Dr. C. L. Robertson, of the Sussex Lunatic Asylum, speaks of an English Gheel, as "utterly impracticable, and if practicable not very wise."⁴

It may be not unreasonably asked, why, after admitting that scarce any reformer desires to try precisely the Gheel experiment in this country, we yet spend time in exhibiting the faults of that plan? We do this for a twofold reason: the men who have so clearly seen and stated the facts about Gheel, are the very ones most enthusiastic in the advocacy of various adaptations, alterations, or modifications of the same fundamental idea; and while agreeing together to condemn the original, disagree entirely as to the desirable method of improving upon it—even bringing against each other's plans criticisms nearly as severe as those upon Gheel. It seems to us that this union in adverse judgment upon a system long established and well known, taken in connection with this disagreement as to plans as yet theoretical, or but imperfectly tried, is very significant. It leads us to anticipate, what we think general experience, *à priori* reasoning, and experiments so far made, all tend to indicate—viz., that for the

¹ Vol. iv., 1858, and vii., 1861.

² Jan. 1870, vol. xv.

³ See Earle's Address on Treatment of Insane Poor in U. S., before Mass. Med. Soc., June 2, 1868.

⁴ Vol. x. Journ. Men. Science, Jan. 1865—"On the Means of Providing," &c.

proper remedial and custodial care of the insane, no practicable form of the "cottage," "family," or "segregate" system can ever be largely available. That a certain extremely small class of patients might possibly be as well and happy in a "cottage" we would not absolutely deny. That they would be as well cared for, we do not believe.

Before setting forth at length the details of the plan now proposed for adoption in this country under the general name of the "American Cottage System," let us glance at experiments already made and making in Great Britain, with a view to seeing how far these have succeeded in promoting the welfare of the insane and reducing the cost of maintenance. These attempts, under the titles of "family" and "cottage," are, it is to be remembered, modifications of the Gheel plan.

Dr. Tuke, in the essay before quoted, has severely criticized the Scottish cottage system as exemplified in the district adjoining his asylum. Here the patients are placed singly or in twos, threes, and fours, in the families of poor peasants, villagers, and tradesmen. Far from all enjoying the delights of rural life, many of them are in the back streets of the towns. Some of the cottages, he says, should more properly be called hovels. Some were filthy, most of them damp and uncomfortable. The inmates were almost exclusively demented and idiotic. There were no facilities for bathing. The food was poor and insufficient. Some of the keepers seemed kind and careful, others low and brutal. The patients who had been brought from the asylum did not appear more contented. Some expressed their sense of *ennui*, and longed after the amusements of asylum-life. Others felt degraded at being controlled by persons of their own or a lower class. "They did not seem to feel themselves free at all." Very little effort seemed to be made to employ them in any way. Cleanliness was sadly neglected. Dr. Tuke remarks upon the comparative comfort enjoyed by patients during bad weather, respectively, in "the stifling kitchen of a hovel," and in the airy wards of his own neighbouring hospital. He moreover goes so far as to make this remark—"In my own asylum any one of these patients would have had greater liberty of action, less restraint, and better and freer air." Admitting a saving of about one-third in cost of maintenance in this particular district, he adds that the saving is made at the expense of inadequate provision for the comfort of the patients. He also makes the pertinent observation that the greater part of the pauper insane were not paupers before their insanity, and that consequently their treatment upon a purely pauper basis is little short of cruelty. The somewhat unpleasant thought is suggested, that whenever the peasant-alienist finds his finances straitened, he will be likely to begin his retrenchments by starving his boarders.

Is it not now rather surprising to find that this very gentleman believes in the practicability and wisdom of this very cottage or family system? He thinks it needs only the addition of a simple machinery of inspection to make it better than the congregate system. After so fully stating the evils of the Scottish method as it exists, and moreover admitting the very small proportion of cases fitted for the most perfect cottage-system, and the small amount of tact or discretion to be expected from an ignorant peasantry, he yet proposes to render the system a success by gathering all the cottages into one neighbourhood, subjecting them to the visitation of a medical superintendent, who shall be the head of the county asylum, and to the control of the Lunacy Commissioners of the district. Still, he would place in them only the demented and idiotic.

Dr. C. L. Robertson, in a number of papers published in the *Journal of Mental Science*—from one of which we have already quoted his views concerning Gheel—upon the various plans for disposing of the insane, seems to favour a

system almost identical with that approved by Dr. Tuke. While violently opposing the Gheel arrangement, he professes warmly to approve the placing of patients, in twos or threes, in cottages upon the grounds connected with an asylum, and under the same medical supervision. To test the practicability of his views, Dr. R. made the experiment in a small way in connection with his own asylum. He met many difficulties, he tells us, through the "prejudices of the neighbourhood, and of the landlord of the cottage, who refused to continue to let it for such a purpose." Notice the significant admission that follows: "The patients, also, tired of the plain fare of the cottage family-table, and sighed for the flesh-pots of Egypt and the well-regulated comforts of the asylum. I therefore have for the present given up the experiment." He also remarks on the very small number of patients whom he found available for the trial. Out of two hundred and fifty female patients he found it difficult to pick out six who could be placed in the cottage. "I had, also," he adds, "frequently to change them, as, when the novelty wore off, the patients were many of them urgent to return to the asylum." The cost he found greater than in the asylum. In spite of his unsuccessful trial, Dr. Robertson's faith in his plan remains unshaken. He attaches importance to the family influence to be exerted upon his cottage patients by their custodians. Still, he proposes to assemble all the patients, for their mid-day meal, in one common dining-hall,—a proceeding not likely, one would imagine, to make them forget they were in durance as insane persons. Moreover, as he proposes putting only two or three patients in each cottage, to accommodate thus any considerable number, either the cottages must be so widely scattered as to make supervision almost impossible, and the coming to one dining-hall very inconvenient, or they must be so crowded together into a compact village as to sacrifice the advantages claimed, and even resemble Gheel, which he condemns.¹

The Scottish Commissioners of Lunacy make the sapient suggestion that all the cottagers who are to receive insane boarders should receive full instructions as to the management of the insane! With this wisdom before his eyes, Dr. Clouston, in his Report of the Cumberland Asylum for 1870, still anticipates difficulty in finding among the small farmers and villagers fit custodians for the insane. Anxious, nevertheless, to propose some improvement upon the long-tried system, he suggests hiring relatives to take care of their own insane: a suggestion which shows into what absurdities a generally sensible man may be driven in the endeavour to accomplish the impossible. If any one fact relating to insanity may be regarded as immutably settled, that fact is the baneful results to all concerned of keeping a chronic lunatic in his own family. As if to redéem his character for good sense, Dr. Clouston makes the shrewd and truthful remark, that those hospital patients who complain most bitterly of their confinement, are usually the very ones utterly unfit for liberty and surest to abuse it.

Besides those patients whose cottage-homes are clustered into districts, with or without some connection with a neighbouring asylum, there are in Great Britain many thousands of single patients boarded out in private families, with no medical supervision. Of six thousand such in England, the Lunacy Commissioners report that their condition "is by no means satisfactory," whether with friends or with strangers.

The "American Cottage Plan"—to adopt a name used by some of its advocates—differs in its details and in its outward aspect nearly as much from the Gheel and Scottish as from the existing congregate plans. We hope to show, how-

¹ Journ. Men. Science, vol. xi., Ap. 1865.

ever, that it may be reasonably expected to exhibit upon trial all the faults of the Scottish system—containing as it does all the elements of weakness, whose practical results we have just seen in the latter. For, like this, it aims at dispensing with locks; at allowing greater personal liberty; at cheaper accommodations; at the accomplishment of more work. Like this, it involves the placing of patients under the immediate control of work-people, and more or less remote from strict medical supervision.

This plan, whose prospective benefits to the States and to their insane wards have been so enthusiastically urged, both before the Illinois conference and in the annual reports of one or two superintendents of hospitals, consists of a central hospital building much like those now in use, surrounded by a dozen or two of smaller houses. Each of these last is to be under the charge of a man and wife, who will have under their care as boarders from twelve to forty lunatics, quiet and willing to work. Upon these buildings are to be no locks nor bars. Recent cases, and any others requiring close attention from the medical officers, or needing seclusion, or the restraints of locked doors and grated windows, are to be kept in the central or hospital building. To this also may be temporarily transferred those cottage inmates who may have transient paroxysms of excitement. From it to the cottages are to be removed those who lapse into dementia, or chronic mania of a quiet type; and perhaps also the convalescents who desire greater freedom with employment. According to one prominent advocate of the plan, the entire premises—which should be very extensive, to carry out the design and afford space for agricultural operations on a large scale—are to be surrounded by a high wall. The whole establishment, hospital and detached cottages, is to be under the rule and government of a medical superintendent.

For this system, as compared to that of congregate hospitals, it is claimed, that it is cheaper in first cost of buildings and in maintenance; promotive of greater content and happiness to the patients; less repulsive to the feelings of both patients and their friends; less subversive of that liberty which is the natural right of man; and more conducive to recovery.

We believe this proposed new system to be impracticable, or if practicable, in every aspect inferior to the existing form of hospitals. What appear as real advantages to be gained, can be equally well obtained in congregate hospitals, provided only these can obtain the liberal grants of land, and the model men, women, and labourers, which seem to be assumed by the advocates of the cottages.

Before stating in detail our objections to the new plan, and its inferiority in various points to the ordinary hospital, we willingly admit that the insane asylums of to-day are by no means faultless. Some of the complaints made against them are entirely unreasonable, springing from the nature of the disease treated rather than from any fault of the system. Others, however, have some foundation, but are due not to radical errors in the plan, but to its improper execution. For instance, we must admit that many of our State asylums for the insane are much too large for the comfort and well-being of the inmates. Their halls and dormitories, too, are often injuriously crowded. Where one man must look after from four hundred to seven hundred patients, he can hardly give to individuals the personal attention their cases may require. The management of so large a household necessitates the enforcing of a sort of rigid, cast-iron, routine discipline, which cannot yield to the needs of exceptional cases. The particular wants of the one curable patient are apt to be lost sight of in attending to the general comfort of his twenty incurable comrades. When, too, the superintendent bears the burden of financial and agricultural management, he is still less able to give the proper individual care to his patients.

Another acknowledged fault of many of our asylums is the deficiency of land and other facilities for employing patients.

The mere statement of these defects shows them to be, not essential but accidental. More, and smaller, hospitals, with plenty of land, are the proper remedy. Other alleged evils found in the existing hospitals will be better referred to when we consider the beauties and felicities claimed for the new plan.

Let us now assume the existence of an establishment consisting of central hospital and one or two dozen cottages, each of the latter to contain forty patients. The difficulty which first occurs is the finding of married couples, fitted and disposed to keep a boarding-house for forty lunatics, and to superintend their labour, their clothing, their general conduct and manners, their getting up and lying down, and their daily food. Remember, in this connection, that with all their care and responsibility, our married friends are not the masters of their own household, but subject to inspection and criticism from certain officers who may intrude upon them at any hour of day or night. If it be said that high wages will secure the right persons, we reply that high wages cannot be given, for the new plan is pre-eminently to be a saving plan.

If it be difficult to secure good attendants for existing hospitals, even when man and wife are employed together—and it notoriously is so—it would surely not be easier to find persons fit to manage a large family of insane people, in a way to combine the greatest amount of happiness with the greatest amount of work. Why putting certain persons, with a tolerably well-known average of good and bad traits, in command of a house and forty patients should develop any especial fitness to soothe and control the insane mind, not potentially existent before in the same persons inside of a hospital ward and under the watchful eye of an educated, philanthropic, and responsible physician, we are utterly unable to see.

Supposing, however, that we have our cottages duly officered, and filled, each with its two scores; the man and wife possessed of the qualities fitting them for superintending at once, housekeeping, farm, or other labour, and for intelligently observing the changes occurring in their inmates, how would the well-known traits of the insane be likely to manifest themselves in this cottage life?

Even among the quiet class thus placed, few groups of forty would fail to include one or more patients whose nocturnal restlessness would prompt them to stroll forth through the unfastened doors. How many of them would conscientiously return in time for breakfast, carefully opening and shutting door or window with tender care for the health and the quiet slumbers of their comrades; how many would get into trouble; how many might enter rooms where they were not wanted—even into the cottages inhabited by the other sex—it is unpleasant even to speculate upon. It cannot be expected that the attendants who have worked all day, with and for their boarders, should keep awake all night to watch them; and a night-watchman for each cottage would be a considerable additional expense.

Besides purposeless straying, elopements must be frequent. It is absurd to say that the patients occupying the cottages would be exclusively those indisposed to abscond, and that the amount of freedom there enjoyed would remove all wish to escape. In countries inhabited by a simple, stolid, and ignorant peasantry, with no ambition or aspiration in life beyond food, drink, and warmth, accustomed to pass their days where fate placed them, with no dream of ever changing their position in the social scale, and never the faintest idea of disobeying the powers above them—amid such a population this plan might succeed tolerably well so far as custody is concerned. But fancy a wide-awake native American, a free, independent citizen, calling no man master, full of plans, and

schemes, and hopes, restless, accustomed to journey thousands of miles for business or pleasure,—fancy such a man contented with the liberty of the so-called cottage, with its humdrum routine of labour, the same yesterday, to-day, and forever! When sunken in the deepest depths of dementia, and only then, could such an one be held for months and years without locks and bars. Or consider even an Irish pauper, who has been in this country long enough to vote and to imbibe the intoxicating sense of his sovereignty; is he the man to pass busy days and quiet nights under the mastership of one whom he thinks no better than himself, and to work moreover without wages?

Of course we do not deny that in every collection of insane people there are a few who may be safely trusted to go and come without eloping. But we do utterly deny that two-thirds of the chronic, quiet insane of a State, can be held in these open houses, without frequent elopements. If these do not occur, it will be due to the “substantial wall, inclosing the premises” which forms a part, not very consistently, of the plan of some of our alienist “freedom-shriekers.” To speak seriously, this wall, while it could not be built high enough to retain an earnest seeker after liberty, would doubtless be amply adequate to the dissipation of any sentimental notions of freedom which might have arisen in the mind of some delighted lunatic upon viewing the barless window and the lockless door. Possibly, however, the docile inmate might be brought to regard it in the pleasanter aspect of a barrier against the intrusions of outside barbarians.

We believe, too, that the sane have some rights as well as the insane. One of these rights is, to be protected against undesired insane visitors. A patient who is generally harmless may have homicidal propensities regarding some of his relatives. Or one usually tranquil may have periods of dangerous fury, during or just preceding which, he would be especially liable to elope and particularly dangerous to be at large. Even some patients considered perfectly harmless, may yet, by their strange ways, terrify women and children. Against all this danger and annoyance, society has a right to protection. It has a right to demand such custody of the insane as will insure at once their welfare and that of their sane neighbours. The patient himself has also a claim to be protected against the possible results of elopement. Drowning, freezing, starving, railroad slaughter, these are results that have occurred and will occur to maniacs and demented people allowed their liberty or entrusted to just such mockery of safe-keeping as must necessarily exist in these cottages.

This consideration, to which we have adverted, of the great difference between the temper and habits of our people and those of middle and lower class Europeans, is of much importance, and has relations with nearly every aspect of the “cottage plan.” Not only does it bear upon the degree of contentment and the number of elopements to be expected, but it seriously affects the industrial aspects of the plan. “No,” the American or Irish-American would say, “I will not work in a gang for the State, and without pay.”

The increased difficulty, if not impossibility, of adequate supervision by the medical officers, is a most serious objection to the new plan. The approach of an officer to a cottage can be seen and prepared for. All superintendents know how close must be the watchfulness, how frequent and unexpected the visits, even to the compactly clustered wards of a congregate hospital, to prevent irregularities, laxities, negligence, and even abuse. Who believes that proper discipline can be maintained when there are a score of detached buildings scattered at considerable distances? It is idle to say that those having charge of the cottages must be persons of high character and intelligence, so as not to require watching. Practically and in the long run the excellence of the keepers

will be proportioned to their payment. And as we have said in another connection, such salaries will not be paid as will secure men and women of character and culture, above, or even equal to, that of the small farmers, mechanics and tradesmen in the surrounding district. Hence there will be just as much need of close supervision in the new as in the old system. As to the facilities for exercising this vigilance there is no comparison between the two. A hospital ward can be entered by the officer, unseen, from either end, from above through the attic, or from below through the cellar, in or out of a regular order, and without the possibility of warning being given. How different with outlying cottages! If we complain, and justly, that one superintendent with two or three assistants cannot adequately care for five or six hundred patients under one roof, what can be expected when these or twice the number are dispersed in detached buildings, accessible only through the open air? What shall be thought of the plan deliberately put forward by the trustees of the Willard Asylum for the Insane in New York, in which is one building, to contain two hundred female patients, situated *one mile* from the main hospital? How is the superintendent of the fifteen hundred patients, here to be domiciled in a dozen different buildings, to be able to meet his responsibility when part of his charge is a mile away from his office? If it be said that some local officer will be responsible for the good management of the remotest building, then we reply that this one ought to be independent and supreme—not trammelled and harassed by a nominal superior who cannot have intimate personal knowledge of things so far removed. Nothing so surely leads to abuses as a divided and unsettled responsibility. It seems to us that no man with any approach to an adequate sense of the obligations attached to the position would consent to be regarded as the supreme head of an establishment whose members are scattered at such magnificent distances.

In a discussion by the members of the Association of Superintendents of Insane Hospitals, at the meeting held in Toronto in 1871, upon a paper presented by Dr. Edward Jarvis, advocating the new system, nearly every speaker expressed distrust and disapproval. Dr. Thos. S. Kirkbride gave his experience of the evils arising from defective supervision, in a trial of the cottage system on a very small scale made by him many years ago. From entertaining great expectations of benefits, he reluctantly passed to entire disapproval and abandonment. And in this instance, we should suppose, the idea was tested under conditions the most favourable possible.

As one out of many possibilities of evil connected with this boasted progressive movement, we do not see how any superintendent could feel that his female patients were entirely secure from injuries of a sort too lamentable and repulsive even to be named. Between inadequate supervision and undue liberty, a door is opened for innumerable abuses.

Some friends of the new system lay especial stress on its greater cheapness. They declaim upon the enormous cost of the mammoth asylums of the day. Forgetting that, from a liberty-loving point of view, they have just been denouncing them as gloomy "prisons," with "cells" and "dungeons," they now inveigh against the extravagant policy of placing paupers in "palaces!" We cannot at all understand how they expect to shelter, warm, feed, clothe, watch, employ, treat, and care for a given number, under twenty roofs more cheaply than under one. Nor have we seen any explanation, except such as seemed to point to inadequate provision and penny-wise economy as the only secret. Every one knows that it is the proportionate cheapness of a large as compared to a small hospital, that has led to what we have pointed out as the excessive and unwieldy magnitude of many State institutions. In answer to all allega-

tions of extravagance in providing for the insane, we maintain that we could not possibly have anything plainer, simpler, or cheaper, consistently with the objects in view, and with a true economy, than are our existing hospitals. The talk about the inexpensive character of the edifices contemplated by the new plan, is a mere tissue of glittering generalities. "The buildings," say our visionary friends, "should be plain, substantial, and inexpensive." Of course they should; and the same aim has been kept in mind in the construction of congregate asylums. The dictum is unobjectionable; as perfectly harmless and inane as Dr. Bemis's opinion that, in the vicinity of every new-plan asylum, "there should be found a few well-to-do families, who would be willing to receive one or two lunatics, such families being governed, so far as their lunatic boarders are concerned, by all the rules and regulations of the hospital!"

We are equally unable to perceive, how, once started, the cottage system can be maintained more cheaply than the congregate. Unless we assume that its advocates contemplate diminishing the comforts to which our insane have been accustomed, we must suppose that the economy of maintenance which they claim rests upon the assumed increase of productive industry. But why should the same patients, living in a so-called "cottage," work better than in a "ward?" There is surely nothing to prevent the providing of all encouragements to industry in the one case as well as in the other. The practical trouble in both is to induce the patient to use the means given. One gentleman thinks the reason patients in congregate asylums accomplish so little work, is because the persons who lead and direct their labours are "mere nurses;" but is this necessary? Another finds the cause in the discouraging necessity for the would-be labourer to take off his slippers and put on his boots, every time he goes out to work! We have not noticed it to be a part of the new system that patients should sleep in their boots. Yet, somehow, they are to work with an alacrity and efficiency heretofore unknown. We are disposed to believe that the advocates of the cottage-system, founded as it is on foreign models, have unconsciously confounded the traits of American patients with those of the European and Scottish pauper lunatics, and are thus anticipating labour-results much more important than they can ever attain. The question whether our chronic insane cannot be made more productive, is entirely independent of the relative merits of segregate and congregate hospitals.

Much stress is laid, by some reformers, upon the greater amount of personal liberty to be enjoyed under the new system. Now we have shown how grave may be the evils attendant on this boasted freedom. We have given reasons why the vast mass of insane patients should not be left to go and come at their pleasure. But if any physician, having charge of the insane, believes that a certain class would be benefited by liberty, why need cottages be built to test the idea? It surely is perfectly practicable to assemble such patients in certain wards of the ordinary hospital, from which the locks and bars shall have been removed. Indeed we once saw this experiment tried, and with very unsatisfactory results. Practically, in every hospital, the very few patients who are sure not to abuse it, can be given a great deal of liberty. If the whole truth were told, indeed, we believe that in most of our large State asylums, very much more mischief arises from too great, than from too little, freedom. We would express, too, our hearty concurrence with Dr. Clouston—an advocate of the cottage-system—in his belief that those who clamour loudest for liberty are surest to abuse it. The vast majority of the patients who affect to be shocked and wounded by the sight and sound of bars and locks are of that difficult, captious, and exacting class who are never contented in or out of hospitals, never grateful for favours, but who consistently complain of everything and

everybody, and uniformly abuse any privilege that may be granted. As this class make much noise in the world, and write to the papers, and employ lawyers, and delude clergymen, their complaints are often mistaken for those of the insane in general.

It is hard to understand how gentlemen conversant with the insane in this country can believe that they are capable of adequate and agreeable control in these open cottages. Do they not every day see patients submitting as a matter of course, and without a murmur, to the organized discipline and restraint of a hospital, complying cheerfully with the requests of attendants whom they see and know to be acting under the immediate direction of the chief medical officer? And do they not also know that if, upon these same patients, any such restraint or coercion were attempted in the family or in the boarding-house, it would be instantly and angrily resisted? Do they not likewise know that just the degree and kind of restraint exerted by the rules and customs of a hospital are often directly and powerfully soothing and curative in their influence?

Much delight is expressed by the friends of the proposed improvements at the idea of a "family life" to be enjoyed by the cottage patients. The pictures of life in a cottage, as given us from Gheel and from Scotland, are surely not altogether charming. A writer to whom we have not before referred, upon "Gheel in the North,"¹ describes the sort of family comfort enjoyed by insane boarders in a part of Scotland considered the most enlightened. The most cheerless attic, the gloomiest cellar, the worst bed, and the poorest scraps of food, make up the home comforts of these unfortunates. But in our proposed American cottage-system, what sort of family life is that which associates together a sane man and wife, with or without children, a female servant, and forty, or even a dozen, chronic lunatics? Even among sane people, a large boarding-house for men has few home-like charms. If in some cottages a superior class be placed, as of educated convalescents, they would not especially delight in associating with an illiterate couple and their Irish "help." Nor would they easily submit to control from such. Some, however, would strictly limit the system to caring for the chronic, pauper insane. Now these—former denizens perhaps of poor-houses, or sunk in dementia—would not appreciate any of the advantages claimed for the cottage life. We acknowledge, however, that those who would thus limit the use of the cottages, do not claim for them much beyond economy.

Admitting a real advantage derivable by insane men from the society of good and kind women, we fail to see why it cannot be as well obtained, and with less fear of abuse, by the practice of placing a man and wife in charge of each male hospital ward. This is done, with alleged good results, in some of our large asylums.

Greater facilities for classification are claimed for the "American Cottage Plan." This claim, like some others, seems utterly groundless. Surely, wards holding from ten to twenty-five patients afford every convenience for this purpose that could be found in detached houses, holding probably twice or thrice the number.

Some persons who oppose the old plan for providing for the insane, and favour the one we are considering, tell us that, in the congregate hospital, patients encourage and strengthen each other's delusions; also, that quiet patients are seriously injured by loss of sleep due to the ravings of turbulent comrades. Hence they argue that patients should rather be separated than

¹ Journ. of Men. Science, July, 1865.

massed together; and especially that noisy ones should be remote from those who are quiet. The first assumption is contradicted by practical acquaintance with the insane. So far as they compare or discuss their delusions at all, each is usually able fully to appreciate the absurdity of his neighbour. Far from supporting each other's false beliefs they are much more apt to ridicule and oppose them. As to the second charge, we would remark that there are very few hospitals which cannot give perfectly quiet lodgings to patients who are in a condition to be really disturbed by the noise of maniacal companions. Many of the complaints upon this score, too, come from the sort of people we have before described as seeking always for something to find fault with. The accounts of disturbance given us by this class are usually grossly exaggerated. We do not believe that in a well-managed and not overcrowded hospital any patient suffers from this cause habitually, or to an extent affecting health, or preventing recovery. Perhaps the evil would not be much less if, in place of disturbing his fellows, the maniac should keep a sane family awake.

Sad as is the fact, we all are aware that with all the machinery of restraint, watchfulness, supervision, and careful medical treatment found in the best-managed hospitals, the most melancholy casualties will now and then occur. Suicide, homicide, and catastrophes by fire or water, will happen. When we remember how subtle are often the movements of the insane mind, how hidden are sometimes the motives that lead to terrible deeds, and again, how utterly careless of danger most demented patients are—ought we not long to hesitate before substituting for the insane hospital of to-day, the loose and ill-contrived schemes we have been considering?

Perhaps we have not sufficiently noticed a certain confusion of purpose and motive among the friends of the new method. Some regard the matter purely from a philanthropic or sentimental point of view. In their minds prevail vague but seductive notions of "liberty to the captive," fascinating pictures of a life of Arcadian simplicity, with the lowing of herds, bleating of flocks, sweet-smelling flowers, and delicious moonshine! We have seen how different is the reality, as shown at Gheel and in Scotland. Certainly the American plan, with its forty boarders in one "cottage," would not seem to promise a much more complete realization of these pleasing dreams. But were it to prove never so Paradisiac, it would not suit the American citizen. Unless demented to the lowest degree, he prefers to choose his own residence, companions, and pursuits. This preference he will be very apt to carry into action if he find the doors open. The other branch of the reforming party look upon the matter only in its economical aspect. We think we have shown that no important saving can be made by the proposed change, except at the cost of the unfortunate class most concerned. If this plan be carried out, and saving be effected in the cost of maintaining the insane, let no one be deceived as to the character of the movement. It will be no progress, but a retrogression—a falling back toward the old poor-house management, under which has existed such unspeakable wretchedness.

It is perhaps not very wonderful that the general public, influenced by the confident promise of economy, and by the idea of greater liberty to be enjoyed by the patient, should look with favour upon the proposed system. But how any physician who has been for years familiar with the insane can regard the new plan as an improvement, we cannot understand.

B. L. R.

ART. XIX.—*Transactions of the Clinical Society of London.* Vol. IV. 8vo. pp. xlii., 200. London: Longmans, Green & Co., 1871.

THE fourth annual volume issued by the Clinical Society begins with the annual address of the President of the Society, Sir WILLIAM GULL. It contains some valuable suggestions as to the proper method of prosecuting clinical study, but, unlike many other able physicians, Sir William does not believe that hospitals furnish the only, or even the best, field for clinical study. The opportunities of private practice, he says, if carefully utilized, might solve for us many obscure problems. The accurate study of the cases of infectious diseases, which can only be observed in private practice, sometimes will teach us through what ways the infection invades the organism, and will enable us, if not to obviate its progress, at least to learn something more of the means for controlling it.

"The Society," he says—and what follows is of equal applicability to medical societies in this country—"has two functions to fulfil: to exhibit the working of the most critical methods of research—to show, in fact, what clinical medicine should be, and to improve these methods. For myself, I am far from believing that he is the best observer who records the greatest number of facts, but he who has the perception which enables him to separate the chaff from the wheat—what is essential from what is accidental."

We shall first invite the attention of our readers to the medical papers contained in the volume.

ART. IV. *Two Cases of Acute Scurvy.* By HENRY G. SUTTON, M.B.—In both the cases reported by Mr. Sutton the affection set in like an acute disease. One patient felt so cold that she had to sit near the fire, and the other had a rigour. The temperature was never below 102° F., and it reached 104° F. in both cases; the pulse ranged from 120 to 140. The duration of the symptoms was in one case twenty-nine days, in the other only eighteen days. In the first case there was an almost entire absence of the usual ecchymotic appearance of the surface of the body; but, on the other hand, there were numerous ulcers and circumscribed spots of extravasated blood in the mucous membrane of the mouth. And after death similar ulcers and spots were found in the mucous membrane of the stomach and colon, and the latter also were seen on the pleura and pericardium. The tonsils when first seen were covered with a gray substance which was mistaken by a surgeon who saw it for the results of syphilitic inflammation, and by a physician for those of diphtheritis, but was simply a slough of the mucous membrane, and did not re-form when once removed. In the second case the lesions of the mucous membrane were not so extensive, but the characteristic extravasations into the skin were present. In both cases vaginal hemorrhage was the symptom which ushered in the disease.

ART. XIV. *On Circumstances influencing the Safety of Subcutaneous Injection of Morphia.* By C. HANDFIELD JONES, M.B.—The cases which Mr. Jones reports show that in certain individuals the subcutaneous injection of morphia gives rise to alarming symptoms, and he is therefore inclined to agree with Dr. Harley, who says that morphia should never be injected alone unless there is reason to know that the patient will experience no ill effects from it. In all other cases it is better to combine it with atropia. Dr. Anstie also thinks it unnecessary and unsafe to commence with larger doses of morphia than one-sixth grain, and in slight cases he finds one-sixteenth of a grain sufficient. Mr.

Jones says "it might be well if the Clinical Society brought their experience to bear upon the matter, especially with the view to discover whether there are any objective signs of the state in which opium is not tolerated, and whether, as the last case I mention suggests, such a state may exist at one time and not at another."

Art. XV. *Paroxysmal Hæmaturia*. By FREDERICK W. PAVY, M.D.—This paper contains a tolerably full report of one case of intermittent hæmaturia and a brief reference to another. The patient in the former case was a man fifty-two years of age, who, as the result of a chill brought on by long-continued exposure in an open dog-cart to cold, passed urine of a dark porter-like colour. Eleven days later, having resumed his ordinary occupation, and again, after a similar exposure, he experienced a repetition of his former attack; others subsequently occurred, after both driving and travelling by railway. The patient was himself disposed to attribute the attacks to the effects of the jolting movements of riding. He had noticed, however, each time before passing the dark-coloured water, that the attack was ushered in with a chilliness, shuddering or shivering, and nausea. Since the first attack there had been no vomiting. It was not long before the patient clearly ascertained that the attacks owed their origin to cold and not to motion of the body, and was able to protect himself against them by means of clothing. When the urine was examined microscopically, no blood corpuscles could be seen, whilst there were visible casts of tubules, dark granular particles and crystals of oxalate of lime. The urine was highly albuminous.

Art. XVI. *On Veratrum Viride in Rheumatism*. By ALEXANDER SILVER, M.D.—Dr. Silver, having become convinced that veratria was a constituent of Laville's Gout Liquid, which is possessed of some efficacy in the treatment of gout and certain forms of rheumatism, resolved to try an official preparation containing veratria in any rheumatism cases which he might be called upon to treat. Tincture of veratrum viride was the preparation selected, and was administered in doses of two minims every two hours during the day, the dose to be doubled and given every three hours during the night. The medicine was regularly exhibited until sickness was induced, and this was usually within forty-eight hours of its first administration. It was then intermitted for a time, to be again resumed, if necessary, when the nausea had passed away. He claims for veratrum viride the power to relieve pain and reduce the temperature. Under its use the urine became more copious and clear, urates ceasing to be deposited. The remedy has also, he thinks, as much power in preventing the occurrence of cardiac complications as any other usually employed in the treatment of rheumatism. The cases which Dr. Silver reports were only of moderate severity, and it does not seem to us that the duration of the disease was shortened in any one of them by the use of veratrum viride. Some years ago we had the opportunity of observing some cases of acute rheumatism treated by the tincture of this drug, and recollect that, further than a diminution of the frequency of the pulse, it seemed to be without influence upon the disease.

Inasmuch as it has been recently shown that veratrum viride does not contain veratria, it is rather strange that Dr. Silver should ascribe whatever therapeutic power it has to this alkaloid.

Art. XVIII. *A Case of Anasarca treated by Puncture*. By C. HANDFIELD JONES, M.B.—In this communication Mr. Jones reports a case of anasarca dependent upon disease of the kidneys. In order to relieve the great swelling of the lower limbs, the following plan of treatment was adopted: The patient, being well surrounded with blankets, was placed in an arm-chair by the fire, and a

trocar of rather small size was introduced into each calf and, the point being directed upwards and the stylet withdrawn, allowed to remain for several hours. Sixty measured ounces of fluid escaped from the right leg, but only ten from the left, in consequence, it was thought, of the canula having penetrated too far, and not lying properly in the subcutaneous areolar tissue. The fluid drawn off was pale, weakly alkaline, faintly yellow, having a specific gravity 1014, highly albuminous, and contained floating films of fibrin. The fibrin was quite devoid of corpuscles, and had a fibro-granular structure. The punctures made by the trocar were only first apparent the day after they were made. The operation was repeated three days afterwards, when 120 ounces of fluid were collected, besides a great deal which ran out of the punctures for several days after, enough to saturate three blankets. The treatment afforded much relief, but the patient died soon after the operations of erysipelas of the face. Mr. Jones thinks that the absence of corpuscles from the fluid, the escape of fibrin from the vessels without the existence of inflammation, and the lower specific gravity of the fluid as compared with that of the serum of the blood are points of interest in the case. Less injury is done to the skin, and less irritation produced by one large puncture than by many small ones, he thinks, and the details above given show that the quantity of fluid evacuated in a short time may be very large.

Art. XIX. *Two Cases of Chorea, with Urinary Analyses.* By C. HANDFIELD JONES, M.B.—In the two cases of chorea which form the basis of this paper, the results of the chemical analysis of the urine appear at first sight rather contradictory, but they cease to seem so when we take into consideration that the first case had been suffering for eight weeks before she came under observation, while the second had only been ill about a week. The following tabular statement enables us to compare the two cases :

1st Case, Female, Age 11 years.

	Acme.	Decline.	Weight.
Urea . . .	111 grains	345 grains	50 lbs. in acme.
Phosphoric acid	9.67 "	35.5 "	63 " " decline.
Uric acid . .	0 "	5.2 "	

2d Case, Female, Age 13 years.

Urea . . .	517 grains	268 grains	51 lbs. in acme.
Phosphoric acid	60.5 "	14.5 "	68 " " decline.
Uric acid . .	5.4 "		

It is quite possible, Dr. Jones thinks, that in the first case the period of excessive urinary elimination had passed by, and that, had the analysis been made earlier, the results would have been similar in both cases.

Art. XX. *Cases of Paralysis of the Soft Palate, &c., resembling Diphtheritic Paralysis.* By W. H. BROADBENT, M.D.—Dr. Broadbent has had the opportunity of observing a case of paralysis of the soft palate, and even of paralysis of the larynx, presenting precisely similar symptoms as are presented by cases of paralysis following diphtheria. Since no history of diphtheria could be obtained in either instance, he thinks it may be concluded that the so-called diphtheritic paralysis is not a specific disease, but a form of nervous paresis resulting most commonly from the effects of diphtheria on the system, but capable of being produced by other acute diseases, and by debilitating causes generally. He is also inclined to look upon this form of paralysis "as an affection of the nerve trunks, by which their conducting power is, for the time being, impaired, and as intermediate in respect of locality between the ordinary forms of hemiplegia

and paraplegia, due to lesions of the brain and cord, and infantile paralysis," which, with Mr. Barwell, he considers to be an affection of the peripheral termination or end-organs of the motor nerves.

Art. XXII. *Case of Paralysis of the Ophthalmic and Superior Maxillary Divisions of the Fifth Nerve, of the Fourth Nerve, and of the Branch of the Third to the Levator Palpebræ on the Right Side, from Syphilitic Disease of the Base of the Cranium.* By W. H. BROADBENT, M.D.—The most interesting feature of this case is the paralysis of the fourth nerve, which, however, was recognized some time after the patient came under Dr. Broadbent's care, in consequence of the double vision, which could not be explained by the trifling amount of strabismus present. "It was found," he says, "on more careful examination, that the two images were obliquely placed with respect to each other; one window, for example, he said was before him, the other on the floor to the right, and a curious fact, which I have not observed in paralysis of the third or sixth nerve, or seen noted, was that, when he closed the left eye, and tried to walk with the aid of the right only, he staggered about as if drunk. This oblique position of the pseud-image below and to the right of the real image, showed that the superior oblique muscle, and therefore the fourth nerve, was the one paralyzed, and the third nerve, with the exception of its branch to the levator palpebræ, was apparently not involved."

Art. XXIII. *Cases of Tinea Circinata (Ringworm) communicated from the Horse.* By TILBURY FOX, M.D. Communicated by Dr. BUZZARD.—Dr. Fox has had the opportunity of observing tinea circinata in seven men, all of whom had taken it from a pony. The cases were all marked; the inflammatory aspect was severe; the infiltration decided; the extent of the eruption greater; and the herpetic character, when the earlier stages were observed, not at all abortive, but much more distinct than usual. In one case, the fungus, luxuriating amid the textures of the skin, set up so much irritation as to induce pustulation in place of the ordinary herpetic vesiculation in certain of the patches. This exaggeration of the features of the tinea circinata was attributed to the plentiful implantation of the fungus germs in unusual abundance and luxuriance. The disease, in fact, looked like an eczema, and might have been readily taken for it—a mistake which Dr. Fox thinks has been made in other cases. He paid a visit to the pony, and thus describes the appearances which it presented:—

"I found its body covered all over with discoloured spots of a fairly circular outline, varying in size from that of a shilling to large irregular patches the size of the palm of the hand and more, the latter formed, I imagine, by the rapid spread of the disease, over a large track. The appearance presented was as though circular pieces of mud had been scattered all over the white coat of the pony, and the mud had been brushed off, leaving the hair over the circular areas with which it had come in contact dirty-white, contrasting with the clear white of the intermediate portion of the coat. But on looking closely to the discoloured patches, it was at once evident that the hairs themselves had become altered in texture and direction. They were curled and bent out of their proper, and into wholly different, directions. They were loosened, and readily came away from the follicle; some broke off; they were also more opaque, and the surface of the skin was covered over by a mealy powder, thickly set about the hairs."

Art. XXV. *Cases of Roseola Variolosa.* By ALFRED B. DUFFIN, M.D.—This paper was noticed in the July number of this Journal for 1871, page 257.

Art. XXVIII. *Cases of Skin Disease treated by Phosphorus.* By W. H. BROADBENT.—An abstract of this paper will be found in the July number of this Journal for 1871, page 253.

Art. XXIX. *Case of Left Hemiplegia, with Total Loss of the Right Eye.* By FREDERICK SIMMS, M.B.—Dr. Simms reports the case of a woman who, an hour after severe flooding following labour, became unconscious, and on recovery suffered from severe aching pains in the left arm and leg, both of which by degrees became paralyzed. This paralysis was followed by a gradually increasing rigidity of the flexor muscles of the affected limbs, by startings and involuntary movements of flexion and extension, all which ended in permanent rigidity of the flexors of the forearm, so that the hand became bent upon the limb, and could not be kept extended. Three days after her delivery, inflammation of the whole eye came on, ending in blindness; speech never being much impaired. Slight improvement followed the use of the iodide and bromide of potassium, and of iron, with liberal diet. From a review of the symptoms, Dr. Simms is inclined to believe that they were due to embolism of the internal carotid, at or near the point where it gives off the ophthalmic branch.

Art. XXX. *Cases treated with Digitalis as a Topical Remedy.* By F. ROYSTON FAIRBANK, M.D.—Dr. Fairbank, having observed that digitalis, when administered internally for the purpose of allaying febrile symptoms, has the power to relieve inflammations and congestions, instituted a series of experiments with the view of determining whether it would have the same effect when applied directly to the inflamed or œdematous part. The results were exceedingly favourable; in fact, he says, “I have never found any other application act so rapidly or so certainly.” The treatment is not altogether new, having been used by M. Debout in hydrocele, and by Dr. Besnier in cases of orchitis. The mode of application of digitalis topically which he adopts, is to make a decoction of the dried leaves, in the proportion of a small teaspoonful to half a pint of boiling water, or a drachm of the tincture may be used instead of the leaves. Flannels should be wrung out in the decoction, and applied in the usual way. Another way of applying the drug is to foment the part affected with simple hot water, and then to rub in a little of the tincture.

Art. XXXII. *Case of Diphtherial Paralysis treated with Faradism.* By EDWARD HEADLAM GREENHOW, M.D.—This case presented to a very marked degree the ordinary symptoms of diphtherial paralysis. Dr. Greenhow being desirous of trying the effects of faradism uncomplicated by the influence of any other treatment, prescribed as medicine a draught of infusion of gentian, and faradized the patient at first daily, and at a later period on alternate days. The upper limbs were the first to regain their power. Twenty-one days after the treatment was begun, she was able to walk a few paces without assistance. From this time she steadily improved, the muscles of her limbs became plumper and firmer, and the improvement steadily progressed, until a complete cure was effected.

Dr. Greenhow calls attention, especially in this case, to the tenderness over the sciatic nerve, and as he has observed this in other patients, he thinks it suggestive, at least, of the occasional existence of neuritis—“a suggestion,” he says, “which obtains support from the fact that my colleague, Mr. Hulke, has, in one case, verified the existence of neuritis in the optic nerves of a patient suffering from impaired vision consequent upon a recent attack of diphtheria.

Art. XXXIII. *Case of Diabetes, treated with Opium.* By HENRY THOMPSON, M.D.—Dr. Pavy has recorded, in a previous volume of the *Transactions*, a case of diabetes successfully treated with opium. In the case reported by Dr. Thompson, no improvement followed the use of opium; on the contrary,

symptoms of drowsiness coming on, it was abandoned. The quantity of urine diminished, however, when tonics, alkalies, and a restricted diet were prescribed.

Art. XXXV. *Case of Cervico-Brachial Neuralgia treated with the Constant-Current.* By THOMAS BUZZARD, M.D.

Art. XXXVI. *Cervico-Brachial Neuralgia apparently cured by the Constant-Current. Double Occipital Neuralgia not relieved by Electricity.* By FRANCIS E. ANSTIE.—We shall notice these two communications together, because Dr. Anstie's communication seems to have been suggested by Dr. Buzzard's. Dr. Buzzard's patient was a woman, sixty-five years of age, who, after presenting some vague symptoms of cerebral disease, began to suffer from neuralgia of the cervical and brachial plexus of the right side. On sixteen occasions the constant-current was applied between the cervical spines and the shoulders or hand. The result was great relief on ten occasions, moderate relief on two, and very slight relief on four occasions. The process described as galvanization of the sympathetic, with the negative pole in the stylo-mastoid fossa, was followed on the one occasion in which it was used by great relief; with the positive pole in the stylo-mastoid fossa there was no abatement of pain. Faradism, on the contrary, undoubtedly did her harm. Dr. Buzzard says that the impression produced on his mind by the results of the use of galvanism, in this case, was a strongly favourable one. None of the other remedies which were used appeared to have any decided influence upon the progress of the case.

Dr. Anstie's case of cervico-brachial neuralgia appears to have been cured by the constant-current. The patient, a woman, although 48 years of age, presented no signs of physiological senility, *i. e.*, no grayness of hair, no arcus senilis, and no detectable rigidity of arteries. The general muscular system was also in a fair state of development. The treatment in the case of double occipital neuralgia was unsuccessful, not even the palliative effects, so often seen, were produced by the application of the constant-current; an opposite effect being produced by it on one occasion. All the other usual methods of treatment, including the hypodermic injection of morphia and atropia, were also found incapable of doing any good. In regard to the kind of cases of neuralgia in which the constant-current is likely to be of service, Dr. Anstie says, "As a general rule, it may be said that there is the best chance of its succeeding in cases where the patient has not entered upon the stage of tissue-degeneration, which marks the latter periods of life. But now and then, from some reason, which we are as yet altogether unable to explain, the current fails entirely, even in the case of a person (like the subject of my second case) who is as yet comparatively young."

Art. XXXVIII. *Accumulation of Hair, String, &c., in the Human Stomach.* By WILLIAM GULL, M.D.—Dr. Gull refers to the case reported by Dr. Best in the *British Medical Journal* for December, 1869, of a woman, in whom, during life, a hard nodular tumour was to be felt at the epigastrium, which, after death, was found to be caused by a concretion of human hair, weighing 30 oz. avoirdupois. The history of a very similar case came under the care of Dr. Godfrey, in which the patient died of peritonitis after a premature labour, and was communicated by Dr. Godfrey to Dr. Gull. There was a perforation, in the duodenum, which opened into the cavity of the abdomen. In the stomach was found a large mass of hair with strings, &c., which extended through the pylorus into the duodenum and through the small intestine. The concretion, weighing $5\frac{3}{4}$ oz., consisted of string, thread, cotton, wool, and hair of three colours—the hair of her own head and that of her children. A third case is briefly

referred to in a letter from Dr. Thorowgood, in which the mass of hair weighed 26 ounces.

The habit of swallowing hair is not peculiar to the human subject, for it is very common among the Angora breed of cats.

Art. XXXIX. *Case of Hemiplegia in a Syphilitic Subject.* By J. HUGHINGS JACKSON, M.D.—Dr. Jackson says there are at least three different ways in which syphilis leads to hemiplegia.

1. Syphiloma of the surface of the brain leads to an epileptic seizure, which is followed by hemiplegia, the epileptic hemiplegia of Dr. Todd.

2. A nodule grows in the motor tract itself, and if it produce hemiplegia at all, the palsy comes on very slowly.

3. The middle cerebral artery, or some branch of it, is the subject of a syphilitic growth, its channel becomes plugged, and as a consequence, there is hemiplegia from softening of the motor tract, and there may be loss of speech from softening of convolutions.

The case which he reports was produced, he thinks, in the third way. It was one of right-sided hemiplegia and nearly complete loss of speech came on gradually without much loss of consciousness. It is to be recollected, in the management of these cases, that the softening of the brain, which is the indirect consequence of syphilis, is to be treated, and upon this the iodide of potassium has very little influence.

Art. XLI. *Facial Neuralgia, re-induced in a Person who had previously suffered from it, by Syphilis, and attended with Ocular Paralysis, and various other Lesions.* By FRANCIS E. ANSTIE, M.D.—The points of interest in the case reported by Dr. Anstie are, first that the neuralgia, although undoubtedly connected with syphilis, and vanishing under treatment by iodide of potassium, was strictly limited to the same side which had been previously affected with hemiplegia, and that the paralyses of common and special sensation, except that of smell, and of the ocular muscles, were similarly unilateral. Secondly, that the recovery of the sense of taste and that of smell closely accompanied the removal of the neuralgic pain and of the anæsthesia, while the paralyses of ocular muscles remained unaffected. "The close connection," Dr. Anstie says, "between the sense of taste and the condition of the fifth nerve, is, of course, well known. But the apparently intimate connection between the state of the fifth nerve and the integrity of the sense of smell, in this case, stands on a different footing, and reminds us of the curious experiments of Bernard, in which he destroyed the olfactory nerves without materially impairing the sense of smell. I need not remind the Society, that in many lower animals the function of smell is entirely performed by the trigeminus, and it would seem that even in man the latter nerve at least retains an important office in connection with olfaction." Lastly, the case illustrates the close connection between an anæsthetic condition of sensory nerves to outward impressions, and the presence in them of neuralgic pain. Dr. Anstie has met with this association so frequently that he is convinced that neuralgia, so far from representing the opposite condition of sensory nerves to that which is represented by anæsthesia, is the expression of a half-paralytic condition of such nerves. The relation, he says, is aptly illustrated by the fact that the paralyzing agency of freezing cold produces intense pain before it obliterates sensation, and that during the recovery from frost-bite the same intense kind of pain reappears. J. H. H.

We shall next invite the attention of our readers to the surgical papers contained in the volume.

Art. I. *Cases of Parenchymatous Keratitis, associated with Acute Rheumatism.* By W. SPENCER WATSON.—A short abstract of this paper appeared in the Quarterly Summary of this Journal, in the number for January, 1871, p. 281. The corneal changes in the cases recorded were indistinguishable from those seen in cases of keratitis depending upon hereditary syphilis, and Mr. Watson considers it therefore a fair question to inquire whether the syphilitic corneal inflammation may not really be a form of rheumatic ophthalmia. In two of the four cases here narrated, the affected eyes were found, after the subsidence of the keratitis, to have become markedly myopic.

Art. II. *Case of Tetanus; Treatment by Ice to the Spine, Belladonna, Chloral, Wine, and Good Diet; Recovery; Interesting Variations in Temperature observed.* By JOHN W. OGLE, M.D.

Art. III. *Injury to the Liver resulting in Abscess; Rupture on the 14th day, diffuse Peritonitis; Formation of a second Abscess, opening into the Colon on the 25th day; Interrupted Discharge of Pus by the large Intestine until the 112th day; Complete Recovery.* By JOHN HARLEY, M.D.—Abstracts of both of these papers, the latter of which describes a case of extreme rarity and interest, have appeared in the Quarterly Summary of this Journal, the former at page 274, and the latter at page 263 of the number already referred to.

Art. V. *Cases of Optic Neuritis.* By ROBERT BRUDENELL CARTER.—Three cases are narrated, and some interesting remarks appended as to the pathology of the affection known as optic neuritis. This condition, which Mr. Carter believes to be sometimes not an inflammatory one, is often present in cases of cerebral disease in which vision is not impaired, such cases not being usually brought under the observation of ophthalmic surgeons until the power of seeing is more or less interfered with. In no case which Mr. Carter has examined, has uncomplicated optic neuritis extended so far as to produce a visible effect on the yellow spot, and the blindness appears to be rather attributable to arrest of conduction, by interference with the function of the nerve tubules, than to any change in the percipient layer. The appearances seem to depend upon cell proliferation in the area of the disk, and there is no œdema of the retina, as there would be, if the current of blood in the central vein were at all seriously interrupted.

“The absence of œdema may, perhaps, show that the dwindling of the arterial and capillary circulation of the disk and retina is an effect of the atrophy rather than a cause; and that the process of wasting is not one of mere contraction of tissue. It seems to be quite certain that a state resembling optic neuritis, but with a greater degree of venous tortuosity, may be produced by growths within the cranium. My third case seems to show that the malady may have a traumatic origin; and I think the other two point to an alliance between optic neuritis and some unknown diathesis or constitutional cause; an alliance analogous to that which connects iritis with rheumatism and with syphilis.”

Art. VI. *Cases of Skin-Grafting and Skin-Transplantation.* By G. D. POLLOCK. Communicated by the President.

Sequel of Mr. Pollock's Case of Extensive Burn healed by Skin-Grafting. By J. WARRINGTON HAWARD.

Art. VII. *On the Transplantation of Portions of Skin for the Closure of large Granulating Surfaces.* By GEORGE LAWSON.—Abstracts of these papers have already been published in the Quarterly Summary of this Journal for January, 1871, page 277. Mr. Lawson advocates the employment of grafts of considerable size, but Mr. Pollock believes the use of very minute portions to

be equally satisfactory, while it is certainly more agreeable to the patient. Mr. Haward's "sequel" reports the complete recovery of Mr. Pollock's patient, and points out the importance of multiplying the centres of new growth by repeated transplantations, so that the scar may thus more closely resemble true skin.

Art. VIII. *A Case of Vaccino-Syphilis*. By THOMAS SMITH.—The patient, a married man, aged 29, presenting no appearance of having previously suffered from syphilis, was vaccinated by four punctures with lymph taken directly from an apparently healthy infant, which, however, three weeks after its own vaccination, had an eruption on the head and buttocks, with "snuffles" and fissured lips. "Three of the punctures ran the ordinary course of vaccination pustules; the fourth pustulated, scabbed over, and at the end of three weeks or a month from the vaccination, its base began to harden, and the induration began to extend." This indurated spot assumed the appearance of a true chancre, and various secondary symptoms followed, though the characteristic glandular implication of syphilis was never very clearly marked. Improvement followed the use of mercury. A report upon this case is appended, signed by Messrs. GEORGE G. GASCOYEN, BERKELEY HILL, and GEORGE W. CALLENDER, who, though confirming the accuracy of Mr. Smith's observations, add that "the reporters, whilst they are of opinion that the ulcer on the arm and the eruption on the skin were of a syphilitic nature, would at the same time point out to the Society the possibility that one of the punctures may have been inoculated with syphilis accidentally from some outside source subsequent to the vaccination."

Art. IX. *Case of presumed Injury to the Ciliary Nerves of the Eyeball*. By ROBERT BRUDENELL CARTER.—A short abstract of Mr. Carter's paper appeared in the number of this Journal for April, 1871, page 581. From a supplementary note, dated June, 1871, we learn that "since the boy was presented to the Society, a new evidence of the shock to the posterior pole of the eyeball has been afforded by the gradual supervention of a considerable degree of myopia."

Art. X. *Syphilitic Nodes in an Infant*. By Dr. MARTIN PAYNE. Communicated by W. CAYLEY, M.D.—The most interesting point in this case is the fact that syphilitic lesions, which are usually of late appearance, were here observed in a child only ten months old. There were two large gummatous tumours (cellular nodes) in the cephalic region, and there had been others on the feet and hands. The first evidences of hereditary syphilis appeared when the child was two months old, his mother having, previous to his birth, miscarried once, and having had one child stillborn. The father presented no symptoms of syphilis, except a recurring sore throat, but the mother had had psoriasis, sore throat, rheumatism, and some affection of the eyes, the nature of which is not mentioned. The child's condition, both locally and generally, was much improved by the administration of mercury, cod-liver oil, and the syrup of the iodide of iron.

Art. XI. *A Case of Spontaneous Fracture of the Femur*. By ARTHUR E. DURHAM.—This is a case of much interest: the patient, a man about forty-four years old, after two falls, neither of which appeared to have done him any harm, began to suffer from obscure pains in the right thigh (at first supposed to be neuralgic or rheumatic), and one night while getting into bed was suddenly seized with acute pain, the limb becoming much swollen, and when subsequently examined, being found manifestly the seat of a fracture. "There was shortening . . . to the extent of about three inches, eversion of the foot, and inability to lift the limb. . . . Crepitus was readily detected, but . . . was more like that produced by cartilaginous surfaces than the hard, rough crepitus of

fractured bone." Extension by means of a weight was applied, while lateral support was afforded by the adaptation of a "leather-felt" splint, moulded to the pelvis and thigh, and under this treatment firm union was obtained in about four months.

"With regard to the true pathology of this case," adds Mr. Durham, "there is much room for doubt. My own impression is that the thigh-bone was damaged—evidently not broken, but probably severely bruised—at the time of the fall down stairs three months previously; that degeneration instead of repair, and absorption of the bony tissues without suppuration, gradually took place, until the bone became so thinned that it gave way under a strain so very slight that the sufferer was unconscious alike of the strain and of the result which ensued. . . . To one point I would venture to direct attention, inasmuch as it seems to me suggestive of discussion. The patient had suffered severely from worry, anxiety, and sorrow, and concomitantly from great strain upon the powers of the brain and nervous system. Now, some years ago, when working at the subject, I collected a very large number of detailed cases of mollities ossium or osteomalacia, and curiously enough the only particular as to possible causation in which all agreed was this—that, in every instance, in some way or other, the patient had been subject to great wear and tear and exhaustion of the brain and nervous system. The question of the relation between over-excitement and rapid waste of the nerve-tissues on the one hand, and degeneration, or, at any rate, deficient repair of the bony structures on the other, may at least be considered to open ground for discussion."

Art. XII. *Operations for Loss of a large portion of Male Urethra.* By Sir HENRY THOMPSON.—The particulars of this case, which is one of much interest, have already been published in the Quarterly Summary of the number of this Journal for April, 1871, p. 577.

Art. XIII. *On the Nature of the so-called Congenital Tumour or Induration of the Sterno-Mastoid Muscle.* By THOMAS SMITH.—This affection consists in a swelling, sometimes appearing as an irregularly shaped oblong induration, occupying a considerable portion of the sterno-mastoid muscle, and evidently within its sheath; sometimes as an abruptly limited lump; and sometimes as two lumps with a distinct interval between them. The swelling is commonly very hard, and gradually disappears in the early months of infant life. Mr. Smith rejects the supposition that this so-called "congenital tumour" is either a new growth or a syphilitic deposit, and makes the very plausible suggestion that it is due to a rupture, either partial or complete, of the fibres of the affected muscle, giving rise to effusion of blood within the muscular sheath, and to retraction of the torn fibres. This view is supported by the histories of two cases of the affection in question, in each of which the lump was observed immediately after birth, the child having been brought into the world by forcible traction upon its legs.

Art. XVII. *Four Cases of Operation for Unusually large Calculi.* By W. F. TEEVAN.—The calculi in the respective cases weighed $4\frac{1}{4}$ oz., $2\frac{1}{4}$ oz., 5 oz., and $4\frac{1}{2}$ oz., the ages of the patients being 74, 55, 32, and 65. In each case the incision was enlarged after the stone was grasped by the forceps, by making three or four successive cuts with the probe-pointed knife. The patients all recovered. Mr. Teevan asserts that the method of operating with a limited incision of the prostate "is usually followed by one of three disasters: death, impotence, or incontinence of urine;" but he gives no statistics to show the correctness of this opinion, which is contradicted by the general experience of lithotomists.

Art. XXI. *Cases Illustrating the Process of Occlusion in the Arteries after Acupressure; with its Relation to the Treatment of Surgical Hemorrhage, and as compared with Ligature and Torsion.* By FREDERICK J. GANT.—Mr.

Gant's observations confirm those of Messrs. Lee and West, as to acupressure, and of Mr. Forster, as to torsion—the first having been published in vol. i., and the latter in vol. iii. of the *Transactions*. (See Nos. of this Journal for October, 1869, p. 477, and October, 1871, p. 496.)

Art. XXIV. *Case of Removal of the Tongue for Cancer.* By HENRY LEE.—The four lower incisor teeth having been extracted, a double ligature was passed through the tongue, and the lip and lower maxilla then divided in the median line; the tongue was next drawn forwards by means of the ligature which transfixed it, and carefully dissected with curved scissors from the parts below. The base of the tongue was then effectually strangulated by repeated introductions of a nævus needle carrying a long ligature, of which three loops were left above the tongue and a free extremity at either end below; the loops being divided, there remained four ligatures, by which the tongue was firmly tied in as many portions. To give additional security a long, curved needle was now passed through the tongue in the line of the ligatures from side to side, and a strong ligature tied over it, and finally several turns of elastic ligature passed around the base of the tongue in the same way. The tongue was then cut off in front of the ligatures without any hemorrhage. The patient recovered. The following practical directions of Mr. Lee are worthy of attention:—

“Two sources of danger have been usually looked for after operations on the tongue; the first is hemorrhage, and the second, where a ligature is used, is the contamination of the blood in consequence of imperfect strangulation, as in the case published by William Hodgson. The ligatures applied in the mode described very effectually controlled the hemorrhage in the case related; and the use of the elastic ligature goes far, in my opinion, to prevent any circulation being restored in a part once strangulated. . . . The mode of feeding a patient, after such an operation, is worth consideration. It is desirable to leave the parts in the median line as quiet as possible, and a patient may be fed without in any way interfering with them. A gum-elastic catheter, or a feeder with a small nozzle, may be introduced between the cheek and the molar teeth, and any fluids so given will readily find their way between the teeth to the back of the mouth.”

Art. XXVI. *Case of Complicated Stricture of the Urethra, treated by Mr. Syme's Operation for Impermeable Urethra.* By CHRISTOPHER HEATH.—The account of Mr. Syme's proposed operation for impermeable urethra (which we have always looked upon as one of the least happy of that distinguished surgeon's inspirations) is to be found in the 40th volume of the *Medico-Chirurgical Transactions*, p. 113. The proposed method consisted in introducing a large staff, grooved on its concavity, through a perineal wound (or fistula, if there were one) into the bladder, and then, with an ordinary “Syme's staff,” forcibly perforating the urethral obstruction, carrying the beak of the smaller instrument along the groove of the larger into the vesical cavity; the operation was then to be completed by cutting outwards with a knife placed in the groove of the smaller staff, and introducing a full-sized catheter, which was to be allowed to remain two or three days. In the case reported by Mr. Heath, the operation, as above described, was modified by substituting for the perineal incision the introduction of a Holt's dilator, by which the stricture was split, and a No. 8 silver catheter then passed and tied in. We hope the successful issue of this case will not lead other surgeons to follow Mr. Heath's example, in adopting this modified form of the old-fashioned “forced catheterization” employed by Boyer and Mayor—a procedure long since condemned by the almost unanimous voice of the profession.

Art. XXVII. *Case of Retention of Urine from Impassable Stricture, treated by Filiform Bougies.* By W. F. TEEVAN.—The patient had suffered from stricture for seven years, and for about ten months had had retention of urine masked by overflow. Complete retention having supervened, Mr. Teevan, with some difficulty, succeeded in passing a very small filiform bougie, upon the withdrawal of which, urine began to flow, nearly three quarts being evacuated in the course of an hour. Gradual dilatation was subsequently employed, and the patient entirely recovered.

Art. XXXI. *Case of Encephaloid Cancer of the Femur, treated by Electrolysis.* By LAWSON TAIT. Communicated by Dr. ALTHAUS.—This case is one of very great interest. The effect of the electrolytic treatment, which was not employed until late in the history of the case, was, except upon the first occasion, to afford complete relief from pain, for four or five days after each application, and to slightly diminish the size of the tumour. The intensity of the pain, before the application of electricity, may be inferred from the fact that it had been found necessary to administer hypodermically from 20 to 24 grains of morphia in each twenty-four hours. We quite agree with Mr. Tait that electrolysis is worthy of a fair trial in any case of cancer in which operative interference is not deemed advisable.

Art. XXXIV. *Case of Naso-pharyngeal Polypus, Brain Mischief; Operation; Death.* By J. COOPER FORSTER.—This also is a case of great interest. The patient was a young man, and the growth was at first supposed to be an ordinary nasal polypus of the firm variety; a considerable portion was removed by avulsion, the operation being attended with profuse bleeding, and the patient, after recovering from the effects of chloroform, complaining of intense headache, followed on the fourth day by aphasia, on the seventh by general convulsions, and on the twelfth by coma and death. Post-mortem examination showed general arachnitis, with pus in various parts of the membranes, cerebral softening in the neighbourhood of "Broca's convolution," and a large quantity of fluid in both lateral ventricles.

"Upon removing the bone about the anterior part of the base of the skull, we were enabled to see exactly from what part the growth arose. It occupied the left side, and filled the space between the greater and lesser wings of the sphenoid, the orbital plate of the frontal, and the cribriform plate of the ethmoid bone. From the nasal fossa it had extended by way of the sphenoidal fissure into the back of the orbit, but without damaging the optic nerve. The cribriform plate of the ethmoid bone was broken, and at its back part there was a small opening about a quarter of an inch in diameter, and a fracture extending forwards from the opening. Microscopically the growth consisted of small fusiform cells and stellate connective tissue, the body of the cells often much swollen, and containing tolerably large nuclei."

Mr. Forster accounts for the implication of the brain by supposing that the growth was adherent to the portion of bone which was broken, and where the small opening existed, and that the fracture was produced in the act of avulsion. In view of the fact that when, in injuries or diseases of the skull, the brain and membranes once become involved, all modes of treatment seem equally unproductive of benefit, Mr. Forster asks the question whether anticipatory treatment, by putting the patient under the influence of small doses of mercury, might not tend to avert the tendency to inflammation. We have long been in the habit, in such cases, of giving small doses of calomel in combination with opium, and, we think, with decided benefit; but to which drug the benefit is to be chiefly attributed may be a matter admitting of some dispute.

Art. XXXVII. *Cases Illustrating the Treatment of Herniæ Temporarily Irreducible.* By C. HOLTHOUSE.—Mr. Holthouse does not believe that the administration of opium in cases of strangulated hernia can do harm by masking the symptoms, but, on the contrary, regards it as a delicate test of the condition of the hernia, and of the necessity, or otherwise, of a surgical operation. If the almost universal experience of practical surgeons permitted us to believe that Mr. Holthouse is correct in the statements which follow, we should feel that the treatment of strangulated hernia was a much simpler matter than we are now obliged to consider it. "After the patient has been placed in bed," says Mr. Holthouse, "one grain of solid opium is given him, washed down with half a wineglassful of iced brandy and water; if the pill be retained, the obstruction is not invincible, the symptoms will subside, and the patient will recover; if, on the contrary, it be rejected, he should at once be brought under the influence of chloroform, one gentle attempt made to reduce the hernia by the taxis, and failing this, the operation of herniotomy performed."

Art. XL. *Case of Acute Disease of the Hip-joint, following the Introduction of a Tangle Tent into the Cervix Uteri.* By ALFRED MEADOWS, M.D.—This is a very curious case. Though the affection of the hip followed so quickly after the introduction of a tent into the neck of the uterus as to appear to have been directly caused by such introduction, careful examination both before and after death (which resulted from acute tuberculosis) failed to show any direct connection between the two. The patient had some time before received an apparently trivial injury of the hip, and it is probable that this, together with the tuberculous diathesis, which she undoubtedly possessed in a high degree, were the real causes of the articular affection; and that the apparent connection between this and the treatment of her uterine disorders was the result of coincidence alone.

Art. XLII. *On the Reduction of an old Dislocation at the Shoulder.* By GEORGE W. CALLENDER.—The patient was a man, aged 46, and the dislocation (downwards and forwards) was of one month's standing: in order to avoid any risk of injuring the axillary vessels, Mr. Callender employed the following manipulation:—

"The patient was placed under the influence of chloroform and, after rotating the head of the bone so as to break down adhesions, the arm was forcibly drawn upwards across the sternum, the elbow being raised almost to the level of the axilla. In this way the head of the bone was depressed. The trunk being fixed, the arm was then forced outwards, by pushing against the elbow, the forearm being flexed, and at the same time movements of rotation were made, the arm being occasionally lowered from the level of the axilla. Reduction was soon effected."

Though the present volume of the Clinical Society's *Transactions* does not seem to us to be quite as interesting as some of its predecessors, it nevertheless contains a good deal of useful material, and altogether forms a satisfactory part of a series which is already becoming one of very great value.

J. A., JR.

ART. XX.—*Saint Bartholomew's Hospital Reports.* Edited by Dr. ANDREW and Mr. CALLENDER. Vol. VII. 8vo. pp. vi., 266. London: Longmans, Green & Co., 1871.

THE seventh volume of the Saint Bartholomew's Hospital Reports is before us, and, in accordance with our custom, we shall present our readers with an analy-

sis of its contents, first inviting their attention to the medical papers, and then to those which are of special interest to surgeons.

Art. I. *The Shape of the Head, looked at from a Medical Point of View.* By S. J. GEE, M.D., Lond.—In this paper Dr. Gee directs attention to the pathological knowledge which may be obtained by a study of careful measurements of the head, and recommends the “cyrtometer” (described by the author in his recent work on Auscultation and Percussion) as a valuable instrument for obtaining the requisite measurements. The proper diameters for measurement are stated, and the normal size and shape of the head determined. The abnormal shapes are thus classified: I. Big heads: Macrocephali. i. Long heads: Dolichocephali. ii. Round heads: Cyclocephali. II. Little heads: Microcephali.

Dolichocephalus Dr. Gee believes to be always the result of increase in the solid contents of the skull and not in its liquid contents, and may be either absolute or relative; when relative the body is dwarfed, whilst the brain and the head remain of a size proper to the age of the child. Rickets, which stunts the growth of the body, may be called the cause of relative dolichocephalus, but when the dolichocephalus is absolute, Dr. Gee doubts whether the rickets is more than an accident likely to occur in a child with a great brain, who is often a weak child.

Hitherto, it has been difficult to understand why, in a rickety head, the sutures continue to be separated when the brain has shrunk in consequence of general marasmus, but a post-mortem which Dr. Gee recently made throws some light upon this subject. A baby, not wasted, but with well-marked rickets and craniotabes, died suddenly. The sagittal suture was half an inch across, and, before the scalp was removed, felt open throughout. But when the skullcap was taken off, it was found that the suture was filled up here and there by narrow ossa Wormii, which most effectually played the part of struts to keep the bones asunder. Dr. Gee supposes that, in these cases, the sutures open in consequence of progressive growth of brain and arrested growth of bone; ossa Wormii are formed; and then, when marasmus sets in, and the brain wastes, the bones cannot come together; compensatory hydrocephalus ensues, merely to fill up the space between the brain and the skull.

Dr. Gee has examined several dolichocephalic heads in older children who presented signs of past hereditary syphilis; he believes that it has no connection either with syphilis or arachnitis, that is to say, hydrocephalus, but that these children were rickety as well as syphilitic in their infancy—a combination common enough, and that the effusion found in the heads of syphilitic children who have died is compensatory and marastic. The interstitial encephalitis, which does occur in syphilitic infants, is free from meningeal lesions.

Cyclocephalus is characteristic of hydrocephalus. Microcephalus is apt to occur in connection with idiocy.

Art. III. *Four Cases of Hæmophilia.* By J. WICKHAM LEGG, M.D., Lond.—The author defines hæmophilia to be an hereditary disease, manifesting itself during the first years of life, attended by a hemorrhagic diathesis, and a tendency to swelling of the joints, this latter a very important feature of the disease. This disease is more generally known under the name of the hemorrhagic diathesis, a name which is objectionable because it does not separate hæmophilia from many other diseases in which a hemorrhagic diathesis is present, such as scurvy, purpura, leucæmia, and jaundice.

The clinical history of these four cases presents nothing unusual; yet it is interesting from the comparative rarity of the disease and our ignorance con-

cerning its pathology. Billroth¹ thinks that the disease is probably due partly to an abnormal thinness of the arterial walls from lack of muscular tissue, and partly to deficient power of coagulation in the blood. This latter point has not been proved from the blood that escaped, for in the cases where attention was directed to this point the blood flowed like that of a healthy person. One of Dr. Legg's cases shows the curious rule of transmission through the women of the family to the boys, the women themselves remaining free from any trace of the disease.

The swelling of the joints which was observed in one of these cases is thus described: "When he was six years old, his left knee began to swell, and this joint has been swollen, off and on, ever since. The knee may keep well for three or four months; it then begins to swell, and will be painful and large for several months at a time, so that the boy is seldom free from some trouble with his joints. Sometimes as the swelling is disappearing in the left knee, it appears in the right, and *vice versa*. Sometimes the ankles swell; but the left knee is the joint most commonly disabled. No swelling has been noticed in any other joints. No difference has been noticed in summer or winter, or in cold or wet weather."

Art. VII. *The Influence of Vaccine Inoculation on Guinea-pigs.* By THOMAS LEEDS.—In this paper are recorded briefly the notes of fifteen experiments made by inoculating guinea-pigs with vaccine virus. In some of the animals killed on the 75th day minute yellow patches were discovered in the liver and spleen, which, on microscopic examination, were found to consist of corpuscles, scarcely distinguishable from pus corpuscles. The experiments, however, did not give uniform results, and were inconclusive.

Art. VIII. *A Plea for the English View of the Nature and Pathology of Addison's Disease: in Answer to the most recent German Doctrine.* By H. M. TUCKWELL, M.D., Oxon.—In this article Dr. Tuckwell gives the clinical history and autopsy of a case of Addison's disease which was under his care, and the appearance of the supra-renal capsule is shown by a plate. Dr. T. criticizes the German view of its pathology as set forth by Rossbach² and contends that it has been fully refuted by the investigations of Wilks³ and Greenhow.⁴ The "English View" he sums up as follows:—

"Addison's disease is a special and peculiar affection of the supra-renal capsules, in which the adjacent ganglia and plexuses of the sympathetic system are generally involved.

"This affection has well-marked anatomical characters by which it can always be recognized, and is best defined as a chronic inflammation of low type, with a strong tendency to cheesy degeneration.

"It is one of the most deadly diseases with which we are acquainted, destroying life slowly by symptoms of distressing nervous exhaustion.

"It almost invariably gives rise to a discoloration of the skin and mucous membrane of the mouth, which ranges from a mere sallowness up to the deepest bronzing, the depth of colouring being apparently in direct proportion to the duration of the disease.

"It can be diagnosed by careful observation of its combined general and local symptoms, with as much precision as any other pathological change in the

¹ General Surgical Pathology and Therapeutics, translated by Hackley, p. 24.

² See No. of this Journal for April, 1871, p. 566.

³ Guy's Hospital Reports, 3d series, vol viii. p. 1, and No. of this Journal for January, 1863, p. 165.

⁴ "On Addison's Disease," London, 1866, and No. of this Journal for October, 1864, p. 533.

body. For there are peculiarities in its general symptoms which distinguish it from other unimportant neuroses; and there are peculiarities in the pigmentation which distinguish this from other unimportant discolorations of the skin.

"It may be capable of temporary relief by treatment, but is, with our present knowledge, absolutely incurable."

Art. X. *Observations upon the Action of Ipecacuanha and its Alkaloid Emetia. Part II.* By DYCE DUCKWORTH, M.D., Edin.—Part I. of these investigations, it will be remembered, was noticed in the No. of this Journal for January, 1870, p. 200. The results obtained by Dr. Duckworth's further experiments may be summed up as follows: Ipecacuanha and emetia must be classed among the irritant emetics. The toxic effects of emetia are found to be similar whether the poison be given by the mouth or by the skin, and the degree of enteritis seems to be determined by the time allowed for the emetia to act. The sudden introduction of large doses of emetia produces rapid paralysis of the heart, and the effect upon the temperature is to lower it. Emetia exerts no important influence upon arterial tension.

In some clinical notes on the therapeutic value of ipecacuanha and emetia, the author shows their somewhat extensive range of applicability, and, among other noteworthy observations, we find it here stated that ipecac and rhubarb work together more effectually in relieving constipation than does either singly in the same case. This action, the author says, is well observed in the case of the compound rhubarb pill, five grains of which, if combined with one of powder of ipecacuanha, act as efficiently as ten or fifteen grains of the pill by itself.

Art. XIII. *Cases of Morbid Anatomy.* By SAMUEL J. GEE, M.D., Lond.—In this paper the author records several very interesting cases of morbid anatomy. Of these one is a case of *primary cancer of the liver* occurring in an infant five months old. The gland was enlarged and weighed forty ounces and a half.¹ The lymphatic glands at the hilum were unaffected. The lobes were studded with round masses of foreign growth, white, tough, and of all sizes, from the smallest possible, to that of a peeled walnut. The number of nodules is opposed to the view of primary cancer, but no cancer was found in any other part of the body. The importance of this case lies in the fact that the child was only five months old. This with one alluded to by Dr. Farre in his work upon "The Morbid Anatomy of the Liver," are the only cases occurring in children under two years of age known to be recorded. Dr. Farre's patient was three months old, but the liver affection was secondary to cancer of the retro-peritoneal glands.

The next case is one of *complete obliteration of the mouths of the hepatic veins*, and is of extreme interest. There is but one other like it believed to be upon record.² The specimen was taken from a male child aged 17 months, who, when fourteen months old

"seemed to have pain in his belly, and his whole body swelled. The swelling settled in his belly in a day or two, and passed away from the rest of his body.

. . . When 16 months old, his belly was tapped, and 12 ounces of greenish serum (sp. gr. 1011) were let out. Serum continued to drain away from the hole, so that next day a canula was put in again, and 2 pints more were drawn off. The fluid gradually collected again. Nineteen days after the first tapping it was done again, and rather more than 2 pints flowed out. Five days after this he died, slowly exhausted, as it seemed. His urine was not albuminous."

¹ The liver of a healthy child of this age would not weigh more than seven or eight ounces.

² See Virchow's *Jahresbericht* for 1867, vol. i. p. 226.

At the autopsy there was found no inflammation of the peritoneum. The liver was denser, tougher, and probably smaller than it should be, and its surface was slightly nodular. The gland was found to be congested, indurated, and fatty. The hepatic veins ended abruptly, "just short of entering the [vena] cava, being cut off from it by a thin membrane only. The lining membrane of the cava was perfectly smooth and natural, but where the mouths of the hepatic veins should have been there were shallow dimples, which had not at all the look of scars." The largest of the hepatic veins passed into the right and left lateral ligaments, and there anastomosed with greatly enlarged vessels contained in the ligaments, which, in their turn, communicated with large veins on the under surface of the diaphragm over the liver. The ductus venosus was not opened.

Dr. Gee frames the following hypothesis to account for the lesions above described. The liver was originally well formed and subsequently became cirrhotic; the cirrhosis seizing upon the capsule around the mouths of the hepatic veins more particularly. He deems this, for three reasons, to be the correct explanation:—

"First, an obliteration of the branches of the hepatic veins is known to be an occasional consequence of cirrhosis. Next, there were dimples in the vena cava, as if they were left to indicate where once the mouths of the hepatic veins had been. And, lastly, I should expect a congenital obliteration of the hepatic veins to be accompanied with a permanent obliteration of the ductus venosus, in a manner such as that whereby congenital closure of the pulmonary artery ensures a patent foramen ovale or septum ventriculorum."

Among the other interesting cases here recorded we may enumerate one of *hydatid tumour within the substance of the brain*, thirty cases of which have been collected by Dr. Bastian,¹ one case of *aneurism of the basilar artery*, and one case of *aneurism of the anterior communicating artery*. In proof of the rarity of aneurism of this latter artery, the author states that Lebert² could find only two cases of it upon record. Dr. Gee is evidently unacquainted with Dr. Hutchinson's elaborate study of intra-cranial aneurism, which was published in the second volume of the *Pennsylvania Hospital Reports* (1869), and in which five cases of aneurism of the anterior communicating artery are collected.

Art. XIX. *Notes of three Cases of Acute Yellow Atrophy of the Liver*. By DYCE DUCKWORTH, M.D., Edin., and J. WICKHAM LEGG, M.D., Lond.—The notes of these cases are valuable from the rarity of the disease. Frerichs,³ it will be remembered, has tabulated thirty-one cases of the disease, and Dr. John Homans⁴ twenty others. The cases here reported did not present any particularly noteworthy symptoms.

Art. XX. *Influence of Temperature on the Pulsations of the Mammalian Heart, and on the Action of the Vagus*. By T. LAUDER BRUNTON, M.D.—The influence of warmth in quickening the pulse has been long known, but the hypothesis of Budge and Liebermeister, that the quickness of the pulse in fever is due to the increased temperature of the body, gives to the physician an interest in the subject which he would not otherwise have. Dr. Brunton made several experiments on the effect of temperature on the rabbit's heart, and from these and the observa-

¹ Reynolds' System of Medicine, vol. ii. p. 498.

² Berlin Klin. Wochenschr., 1866, Nos. 24–42.

³ Treatise on the Diseases of the Liver, vol. i.

⁴ See No. of this Journal for July, 1868, p. 53.

tions of others on healthy and feverish men, he concludes that the quickness of the pulse in fever is mainly due to the higher temperature of the heart.

I. M. H.

We shall now invite the attention of our readers to those papers which are more particularly interesting to surgeons, and first to

Art. II. *Cystic Tumour of the Jaws*. By ALFRED COLEMAN.—Mr. Coleman believes cysts of the upper maxilla to be more common than is usually supposed, and expresses the opinion (which, if we mistake not, is now generally entertained by pathologists) that the affection ordinarily described as “dropsy of the antrum” does not consist of an accumulation of the natural secretion of that part, but is an example of cystic formation, probably due to the irritation caused by the presence of carious teeth. The treatment recommended by Mr. Coleman is to make a free incision through the bony wall of the cyst, with a strong scalpel, and then induce suppuration by introducing a tent of lint moistened with a solution of carbolic acid: if, however, the tumour be connected with a tooth which is so much diseased as to justify its removal, extraction should be practised, when the tent may be introduced through the alveolus; or if the cyst should itself come away with the tooth, the use of the tent may be dispensed with. Mr. Coleman's views as to the true nature of the so-called dropsy of the antrum were, he tells us, first announced in communications which he made to the Odontological Society of London, in 1862 and 1863.

Art. IV. *On Degeneration of Bone*. By EDWARD LATHAM ORMEROD, M.D., Cantab.—This paper may be looked upon as a sequel to one *On the Pathology of Fatty Degeneration*, published in the 4th volume of the “Reports,” and noticed in the number of this Journal for January, 1869 (p. 190); the fortunate discovery that an available supply of degenerated bones can be obtained from lunatic asylums, has enabled Dr. Ormerod to complete his study of “fatty degeneration” (so-called), by investigating the pathological anatomy of this condition in the osseous tissue.

“In selecting mollities ossium as the best illustrative example of degeneration of bone, I do not mean to imply that the terms are exactly commensurate. True, that in mollities ossium the pathological changes of degenerated bone are displayed in the most extreme and striking forms; but the same changes are to be seen also under other circumstances. They may occur as the apparent effects of old age, or of anything, in fact, which brings on premature decay. On the other hand, the want of earthy matter, which has suggested the terms of mollities or fragilitas ossium, does not necessarily imply degeneration of bone, for this is an essential character of rickets, which is a disease of quite a different nature.”

In rickets there is defective development, in mollities ossium there is premature decay. Dr. Ormerod has made most of his observations upon degenerated ribs, because (at least in the insane) the disease appears commonly to be further advanced in these bones than in other portions of the skeleton.

“Usually . . . a degenerated rib is a little larger and rougher than natural; it is flattened perhaps and misshapen from frequent fractures. It yields to the knife or breaks in the hand, all its material strength depending on a thin outer shell of bone; and the exposed surface is dark, wet, and greasy . . . The general arrangement of the interior of the bone is best displayed in a decalcified section. Here we see the central medullary cavity divided into unequal and irregular spaces, the largest being in close connection with the thin outer wall of compact tissue.” This layer of compact tissue presents “all the ordinary features of healthy bone, only somewhat confused and on a very contracted scale. On the outer edge there are a great many simple cells, large, round, and

without any canaliculi at all. . . . Then comes an irregular deposit of bone, everywhere thin, in some places entirely wanting, laminated concentrically to the long axis of the rib, and freely dotted with periosteal bone-cells. The red zone is occupied by Haversian systems, which are crowded together and cut into each other. This is the only really normal part of the bone, and the one on which its strength mainly depends. . . . But as we carry the examination deeper into the next zone, the Haversian canals are seen to be larger, and the transparency of the innermost concentric rings of the Haversian systems becomes a very prominent feature. If we should happen to be using a section stained with magenta, we shall observe that these transparent rings take the dye more readily than the rest, an indication, I believe, of the removal of the earthy matter, with which this dye has little affinity. Another characteristic of this zone, though not limited within these bounds, nor indeed absolutely confined to degenerated bone, is a minutely granular appearance of certain districts, sometimes involving entire Haversian systems, to the exclusion of the usual fine converging lines of the canaliculi. . . . The earthy matter has apparently not been removed, as these granular patches do not take the magenta readily. The only explanation . . . is, that the canaliculi are irregularly obstructed by the presence of some substance in their interior. Just as the dentinal canals are in what dentists familiarly know as red teeth. . . . The cancelli . . . are very sparingly dotted with bone cells of the medullary type. The new transparent deposit of bone which lines the large areolæ is still more scantily provided. Indeed, just here the laminae are so thin, and so closely packed together, that there seems hardly to be any room for bone-cells."

As in the case of the soft tissues, the degeneration of bone is, according to Dr. Ormerod, not properly speaking "fatty" degeneration, though it may be followed by fatty infiltration. The bone-cells are not liable to the occurrence of the latter condition, and the amount of fatty matter is probably proportionably less in the medullary mass of a degenerated, than in that of a healthy bone, the absolute increase or decrease depending more upon the shape of the bone than upon the degree to which degeneration has occurred. "Such fatty infiltration as there is, occurs in the interior of the enlarged Haversian canals. Here in the thickened coats of the vessels, and around them, we find abundance of minute oil globules, here is the source of the loose fatty matter which crowds the field of the microscope. The singular opacity of fragile bone, however, does not depend so much on the presence of adventitious fatty matter as on a molecular change."

Dr. Ormerod's excellent paper is illustrated with a plate containing five figures, and with several wood-cuts.

Art. V. *On the Treatment of Diseased Joints by Rest and Extension.* By W. S. SAVORY, F.R.S.—This is a paper of considerable interest and of great practical value: in the case of the hip-joint, Mr. Savory recommends the employment of the long splint and weight extension apparatus, with which American surgeons are so familiar; and in the case of the knee-joint, a hollow metal splint made to embrace the back and sides of the leg and thigh, with a foot piece, a hinge-joint at the knee, worked either by a screw passing between the thigh and leg pieces behind, or by a rack at the side; extension is made by means of another screw acting either through the foot piece or at the knee. Mr. Savory's remarks upon the advantages of combining rest with extension, in the treatment of joint diseases, rather than relying upon either rest or extension alone, appear to us eminently judicious, and we quite agree with his condemnation of the "fashion of the times" which aims to "dispense altogether with means [of treatment], however useful and advantageous they may be, if they can be shown to be not absolutely necessary." As Mr. Savory justly remarks, many things may not be absolutely essential to success in treatment, and yet render the

treatment much safer and much more certain to succeed than it would be if they were omitted.

Art. VI. *A Case illustrating certain Nervous Diseases.* By Sir JAMES PAGET, Bart., F.R.S.—This short paper gives an account of a very curious case. The patient was a gentleman aged twenty-eight, who, at the age of twenty, being subject to frequent “colds,” was advised (on the “hardening” principle of which patients’ non-medical friends usually think so highly) to employ cold shower-baths, and as the result of eight days’ trial of this remedy, became the subject of a remarkable disturbance in the blood-supply of his feet, at first the left, but afterwards the right foot being the one principally affected.

“Whenever he walked slowly for so much as half an hour, or quickly for so much as ten minutes, the foot or feet became ‘dead,’ that is cold and numb, and (as he always expressed it) white, like marble. They thus changed much more quickly in cold than in warm weather, and often changed in the same manner during cold weather, even when he was at rest. With the deadness he always felt aching, and sometimes severely aching pains at the side of the foot, and sometimes half way up the leg. This state would continue so long as the patient continued walking; but when he rested, it would in a few minutes change, and the foot, or feet, would become flushed, ruddy, and hot, with over-filling of the veins, and the pain would slowly subside.”

This uncomfortable condition, which was brought about in eight days, proved utterly rebellious to all kinds of treatment, having persisted for eight years when the patient came under the author’s observation.

Sir James Paget uses this case as an illustration of several points of practical interest. In the first place, it furnishes a striking example of the effects of the shock of cold, which is sufficiently often the cause of injury “to suggest more caution than is commonly used in its employment.”

“Few things,” adds the author, “hinder recovery from old injuries of joints more than the use of the cold douche in any but very robust persons. And I have known a case in which a patient, who was healthy, except in having a too vivid nervous system, became, after being once submitted to a severe cold douche on his back, the subject of all the chief symptoms that commonly follow railway concussions of the spine.”

The curious disturbance of the vaso-motor nervous system in this case, suggests the possibility of a similar condition in parts which are not exposed to view, in cases of spinal irritation, or so-called hysteria, and in parts which, though apparently healthy in structure, are morbidly sensible of fatigue.

Finally, this case shows that “although the vascular and nervous conditions of a part are always disturbed in inflammation, they constitute only a subordinate part in that morbid process. They may be very often and far removed from their normal state, into one like that which they assume in inflammation, and yet no change of structure may ensue in the tissue-elements around them.”

Art. IX. *On the History of the Treatment of Congenital Club-foot.* By HOLMES COOTE.—This short paper gives an interesting account of the early attempts to remedy the deformity of club-foot, and particularly of the modes of treatment employed before the introduction of tenotomy.

Art. XII. *On Ranula.* By W. MORRANT BAKER.—After referring to the opinion formerly entertained as to the nature of ranula, viz., that it consisted in a dilatation of the duct of the sub-maxillary gland, and showing, by quotations from several recent works on surgery, that this doctrine is still not without advocates, Mr. Baker gives several cases in support of the view that the disease in question is an example of independent cystic formation, and sums up “the

present evidence against the existence of a connection between ranula and dilatation of Wharton's duct," as follows :—

"1. There is no positive evidence of any kind, that obstruction of Wharton's duct accompanies, or is connected with, the formation of a ranula.

"2. There is abundance of proof that in cases of ranula, Wharton's duct is usually quite free; while, very commonly, saliva may be seen flowing from the duct, without any accompanying alteration in the size or other characters of the tumour.

"3. The fluid of a ranula is very unlike saliva, which may have been seen, a moment before the tumour was punctured, possessing its ordinary qualities of colour and consistence, as it escaped from the sub-maxillary duct.

"4. The fluid contained in the common form of ranula is hardly or not at all to be distinguished from that of certain cysts in parts of the body in which no salivary glands exist.

"5. The symptoms of known dilatation and obstruction of Wharton's duct are altogether unlike those of ranula."

Art. XIV. *On the so-called "Serpent Teeth."* By GEORGE W. CALLENDER, F.R.S.—The term "serpent teeth," Mr. Callender tells us, is the popular expression to denote torsion of one or more of the incisors, usually of the upper maxilla. This deformity is briefly mentioned by systematic writers on dental surgery, but no definite explanation seems to have been given of the mode in which it occurs. After referring to the development of those parts of the upper maxillæ which are connected with the incisor teeth, Mr. Callender proceeds to apply the facts which he has set forth, in the following summary :—

"1. If the incisor process is weak, or retarded in the time of its development, it has less than the normal control over the forward growth of the intermaxilla, and the alveoli grow forward and the teeth project in proportion.

"2. If the incisor process is stunted, it grows in and narrows the palate. By side pressure on the posterior portion of the intermaxilla, it forces it in, with a twist on its axis, and the sockets growing under the influence of this twist the incisor teeth suffer torsion. The temporary teeth may show little of this malformation, whilst the permanent teeth, the sockets of which are more closely related to the solid fabric of the intermaxilla, are those which suffer.

"3. In the treatment of the extreme malformation, cleft palate and harelip, when the incisor process has aborted, great care should be taken by the operator in pressing back the intermaxilla not to give it a lateral twist. . . .

"4. When the incisor process aborts, the incisor teeth are apt to suffer from imperfect lodgment, the protecting alveolar plates from the incisor process being absent; the lateral incisors are more likely to fail than the central, the latter having their sockets most largely formed by the central part of the intermaxilla.

"5. In the ossification of the central part of the intermaxilla, plates of bone are formed one above the other, those in front being placed horizontally, leaving intervals between them. This arrangement may account for the occasional horizontal position of a permanent incisor, the direction of its socket having been determined during the early steps of its development, and may also explain the chance formation of an extra chamber for a supernumerary tooth.

"6. If the labial surface of an incisor is twisted in (towards the middle line), it is due to pressure from the opposite side, the maxillary arch having been forced in from imperfect development of one of the incisor processes—the central incisor is the tooth usually distorted in these cases."

Mr. Callender's paper is illustrated with a lithographic plate containing six figures.

Art. XV. *On the Treatment of Cleft Palate in Infants, and on the Cure of Clefts of the Hard and Soft Palates by Operation under Chloroform.* By THOMAS SMITH.—This is perhaps the most important surgical paper in the volume,

and forms a most valuable contribution to the literature of staphyloraphy and uranoplasty. Since the publication of Mr. Smith's paper in the 51st volume of the *Medico-Chirurgical Transactions* (see number of this Journal for April, 1868, p. 541), he has operated in forty cases, which are here given in detail, with a full account of his mode of procedure; and an excellent practical commentary upon the whole subject of cleft palate and its treatment.

Mr. Smith has kept a record of 125 cases in all, in 16 of which the soft palate alone was involved, in 59 the soft and part of the hard palate, and in 50 the whole palate, soft and hard. The sexes are pretty equally represented in these figures, 59 patients having been noted as boys and 61 as girls.

The treatment in newly born infants consists merely in securing a proper amount of nutriment to the patient, the author agreeing with Mr. Pollock in considering operative interference inadmissible at this age:—

“The operation in infants, according to my experience, is unnecessary, and, as one gathers from published accounts, is much more dangerous to life and much less likely to succeed than if performed at a later period. Even if the performance of the operation could be justified on the score of necessity, one can scarcely imagine that in the case of an infant seriously atrophic from deficient nutrition the proceeding would be likely to succeed, or would add to the infant's chances of ultimate recovery.”

If the child cannot take the breast, it may be fed with a spoon, with a feeding-bottle provided with a thin leaf-like sheet of India-rubber attached above the teat, so as to occlude the aperture in the palate (as advised by Messrs. Ramsay and Coles), or even with a feeding-bottle having a teat with a large hole through which the milk can be safely poured a little at a time into the pharynx.

The age at which operative measures should be instituted cannot be fixed by any general rule, but probably two or three years old may be taken as the minimum, while it can seldom be necessary to postpone the operation beyond the age of six.

With regard to the operation itself, Mr. Smith recommends (herein differing from Mr. Holmes) that, as a rule, the whole cleft, both of the hard and soft palate, should be closed at one sitting:—

“The length of the cleft adds little to the difficulty of the operation, nor does it diminish from the chance of cure. The highly arched palates, where the margins of the cleft are nearly vertical, are usually easily remedied, and they require for their closure less skill and less division of the soft parts than those clefts that are wider, where the palatine arch is flatter, the sides being more horizontal.”

Mr. Smith recommends the use of several special instruments, the most important being a gag which is slightly different from that which he at first employed, a tubular needle modified from that used by Sims for vesico-vaginal fistula, and “suture scissors” which “quickly seize, divide, and withdraw a suture with one and the same movement.” Horsehair and fine silver wire are recommended as the best materials for sutures. For separating the muco-periosteum, in the operation on the hard palate, Mr. Smith recommends ordinary aneurism needles, or a “Holden's director,” as preferable to the raspatories ordinarily used, these being too large and thick for children. The point at which union is most apt to fail is at the junction of the hard and soft palate.

“It usually requires some care and patience to free the muco-periosteum and the fascia of the velum from their continuous attachment at this spot, and when much difficulty occurs in bringing the cleft together, I have with advantage, after making the lateral incisions, passed, as a supplementary support, a silver wire through these incisions and behind the new palate, so as

to draw together the margins of the cleft and relieve the tension on the sutures."

The after-treatment is very simple: no warm food should be given until the day after the operation, and no substances requiring much mastication for the first fortnight; the patient should, if practicable, be kept in bed during the first week, and the sutures should not (in the case of children under ten) be removed for three weeks or a month, and then, if the patient be turbulent, with the aid of anæsthesia.

Mr. Smith concludes his valuable paper with details of the forty cases in which he has operated since the publication of his communication to the Royal Medical and Chirurgical Society, which has already been referred to.

Art. XVI. *On Tubercle in the Eye.* By B. J. VERNON.—Mr. Vernon questions the desirability of retaining the expression "tubercle in the eye," as though the occurrence of tubercles in the choroid in cases of acute tuberculosis is undoubted, yet the anatomical features of these cases scarcely differ except in degree from those of suppurative choroiditis, and the diagnosis can hardly be made except by ascertaining the history of the case and by noting the presence of tuberculous disease in other parts of the body.

Art. XVII. *On Excision and Abscission of the Eyeball.* By B. J. VERNON.—In this paper is given a fair estimate of the comparative advantages and disadvantages of excision or enucleation of the entire eyeball, and of mere abscission of its anterior portion.

Art. XVIII. *Report of the Ophthalmic Department.* By HENRY POWER, M.B., Lond.—The ophthalmic wards of St. Bartholomew's Hospital have been open for the reception of patients only since October, 1870, and this is therefore the first report of the work therein accomplished. In the list of operations we observe 26 for cataract, 8 for capsular opacities, 26 for strabismus, and 37 iridectomies. Several cases of interest are narrated at length, and one (a case of hemorrhage into the substance of the retina, connected with disordered menstruation) is illustrated with a handsome chromo-lithographic plate. The following remarks upon the purulent ophthalmia of children are worthy of attention:—

"We may, I think, reasonably presume that the pus-globules discharged in such vast quantities in this affection are derived from two sources, partly and chiefly from the proliferation of the cells of the conjunctival mucous membrane, but partly also from the escape of the white corpuscles of the blood through the enlarged and congested capillaries and smaller arterial and venous trunks. The application of astringents would appear to be the proper remedy for the arrest of both processes, for by constricting the bloodvessels the supply of pabulum serving for the rapid division and multiplication of the epithelial cells would clearly be at once reduced, whilst, on the other hand, the number of the white corpuscles escaping from the vessels would certainly be diminished. Practice, in this instance at least, while it long preceded, is in full accordance with theory. . . . There would appear, however, to be some other condition present besides mere congestion of the bloodvessels, since not only do we meet with many other forms of conjunctivitis where intense redness is present, whilst the amount of discharge is comparatively small, but it is common to find that the due application of astringents temporarily checks the formation of matter, though it recommences again, and may even reach a higher point than before. On considering these circumstances it appeared to me to be probable that, since in most cases of purulent ophthalmia some kind of contagion was present, if this poison could be neutralized or killed, the progress of the disease would be stayed. With this in view, I determined to try and compare the effects of carbolic acid, chloride of zinc, and Condyl's purple fluid

[a solution of the permanganate of potassa], both alone and in combination with alum lotion."

The carbolic acid, in such proportions as were considered safe, was found inert, and the chloride of zinc rather injurious than beneficial.

"The results of my experiments with Condyl's fluid, however, have been of a much more satisfactory nature. . . . The best proportion was found to be 100 minims of Condyl's dark fluid to about 8 ounces of ordinary alum lotion, containing from two to four grains to the ounce, and the mode of employing it is as follows: The eyes should first be carefully washed with a jet of cold water to clear away the collected muco-purulent flakes; an examination being made, about an ounce of the Condyl's fluid is then to be injected, and the mother directed to drop in a few drops every hour."

Art. XXI. *Second and concluding Report concerning a Case of "Anomalous Affection of the Nervous System in a Boy."* By LUTHER HOLDEN.—We have here the sequel of a very remarkable case, the particulars of which were fully given in the third volume of the Reports. The patient had at the side of the neck a small tumour or "bump," pressure upon which gave rise to most curious nervous symptoms, a similar sequence of symptoms moreover occurring at intervals without any apparent cause. The tumour was removed by Mr. Holden with the gratifying result of effecting a complete cure. "The tumour was composed of fat. The most careful examination could detect nothing to account for its singular sensibility, beyond the ramifications of a slightly hypertrophied cutaneous nerve."

The present volume contains, as usual, elaborate statistical tables, which are of great value, and which reflect much credit upon their compilers, Dr. W. Ainslie Hollis and Mr. J. Astley Bloxam, the medical and surgical Registrars. It also contains an index, which, if not very elaborate, is at least better than none. Upon the whole, we think the volume is a satisfactory one, and compares very favourably with those which have immediately preceded it. J. A., JR.

ART. XXI.—*The Manchester Medical and Surgical Reports*, October, 1871. Editors, S. MESSENGER BRADLEY, F.R.C.S., WALTER WHITEHEAD, F.R.C.S. Ed. Vol. II. pp. xxiv., 216. Manchester: J. E. Cornish, 1871.

THIS second volume of the *Manchester Reports* contains a large preponderance of surgical articles, short abstracts of which we lay before our readers.

The first paper is by Mr. THOMAS WINDSOR, *Upon the Treatment of Wounds of the Eye by Suture*, which injuries, when extending deeper into the eyeball than the conjunctiva, were formerly left to nature, but for the cure of which sutures have been used by several authorities, in later years. They were first adopted in experiments and operations upon the cornea, having been recommended by Dr. Williams, of Boston, in flap extraction of cataract, while Dr. O. D. Pomeroy, in vol. lxviii. of the *Boston Medical and Surgical Journal*, reported their successful application to an incised wound of the sclera with coloboma. In confirmation of this practice Mr. Windsor narrates a case of slowly healing incised wound of the sclerotic, half an inch in length, where he introduced a suture with the happiest results. He also reproduces two similar cases reported by Mr. Bowman, together with one occurring in the practice of Mr. Lawson, and in an unpretending way the paper is a pleasant and instructive one upon this interesting subject.

W. C. WILLIAMSON, F.R.S., Consulting Surgeon to the Manchester Institution for Diseases of the Ear, furnishes a desultory article on *Some of the Difficulties encountered in the Diagnosis of Aural Diseases*. He first gives an interesting sketch of the comparative anatomy of the ear, and shows its progressive development in the ascending scale of animal life. The object of the writer seems to be to prove that the only aid we possess to the physical diagnosis of diseases of the ear, further than simple vision, is the otoscope, and that therefore much of our treatment of diseases of the internal ear is necessarily empirical; and that, consequently, the credit of aural surgery will be best maintained by frankly admitting that we can only rationally treat diseases of the Eustachian tube, external ear, and meatus auditorius externus. No attempt is made to clear up the difficulties said to exist further than to dissuade beginners from dependence upon books which give details of diseases which have not and cannot be demonstrated, and that tend to discourage the inquirer when he fails in practice to recognize the niceties laid down therein. The paper can only be regarded as a contribution to our knowledge from the fact of its attempting to draw the line between what we do and what we do not know, and viewed in this light it is possessed of practical value.

The paper next in order, which we are told was read before the Surgical Section of the British Medical Association at its meeting in Plymouth last year, prior to the address of Mr. Lister upon the same subject, is on *Antisepsity in Surgery*, by EDWARD LUND, F.R.C.S. Its author considers that the antiseptic method as now applied to the treatment of wounds is but the development of the old idea of the importance of preventing putrefactive change in the discharges. The objects aimed at are the prevention "of constitutional disturbance, the protection of the surface from loss of substance by sloughing or ulceration, and the saving of strength by the non-secretion of pus, or its formation in harmless quantities." It is admitted that the treatment recommended retards the healing of wounds, but the resulting cicatrix is thought to be more flexible from the smaller amount of fibrinous deposit, which depends upon the less inflammatory activity permitted throughout, and that in consequence of the small quantity of fibrin effused, there exists less tendency to contract. While Mr. Lund has had most experience with carbolic acid, he thinks many other volatile substances may be used with benefit, the theory being that they keep the wound in an atmosphere in which deleterious germs cannot exist. In conclusion, Mr. Lund thinks that the carbolized muslin dressing, as now advised by Mr. Lister, furnishes the best means of treating wounds antiseptically yet introduced.

W. H. BARLOW, M.D., Hon. Medical Officer General Hospital and Dispensary for Sick Children, Manchester, contributes the next surgical article, which has for its caption *On the Practice and Rationale of Skin-Grafting*, and reference is made in it to some cases treated by the method introduced by Messrs. Reverdin and Pollock. Pieces of skin as large as peas are excised by a bistoury and carefully spread out upon the granulations, care having first been taken to wipe the latter dry, and the grafts retained in position by a strip of plaster. Not only did cicatrization proceed from the islands of skin thus obtained, but the edges of the sores were observed to take on increased activity, which fact Dr. Barlow thinks may be accounted for on the supposition that, being no longer obliged to keep up the entire circulation in the cicatrizing tissue, the original local vitality of the part is expended on the repair of the periphery of the ulcer. Dr. Barlow concludes his contribution by pleasing anticipations of future triumphs to spring from this new method.

Mr. Windsor next writes *On the Treatment of Gonorrhœa by the Urethral*

Douche, and holds that if the inflammation can be thoroughly treated while it is confined to the anterior portions of the urethra, the attack will be cut short. For the accomplishment of this end Mr. Windsor thinks an easy and satisfactory method is presented in the *douche*, and he speaks of attempting to use a double catheter, but does not seem to be acquainted with the article on the same subject by Dr. Addinell Hewson, contained in the second volume of the *Pennsylvania Hospital Reports*, in which his views are anticipated nearly three years. The same author also presents a case in the succeeding paper *On the Use of Croton Oil in Old Opacities of the Cornea*, in which that irritant applied topically in a diluted form proved of much service, and was followed by no ill consequences.

One of the editors, Mr. S. MESSENGER BRADLEY, contributes some *Notes on Syphilis*, in which he regards the disease in question as zymotic, and maintaining the unity of the syphilitic poison, holds that the varieties observed depend upon the varying tissues in which the specific germs are deposited. He appears to mistake the ground occupied by dualists, for while they are obliged to admit that in some cases it is impossible to say whether a sore is a chancre or a chancroid, they yet maintain that the difference does exist, and will be manifested in the results; they contend further that the distinction is of value, as it can generally be recognized, thereby rendering possible a fairly certain prognosis as to whether secondaries may or may not be anticipated. All this is in great measure admitted by Mr. Bradley, whose distinctive belief is in *unity of species*, with varieties which, in the vast majority of cases, "breed true," but sometimes interchange. Some experiments upon the lower animals are adduced which will hardly be considered conclusive by dualists, though they may serve to arouse the mawkish sentimentality of those whose sympathies are keenly alive to the moral rights of the brute creation, who will doubtless regard such experiments upon guinea-pigs and kittens as not only cruel but positively immoral. The peculiar features of hereditary syphilis are briefly referred to, and an interesting contrasted parallel between the lesions of secondary and tertiary syphilis occupies considerable space. Several illustrative cases are cited, and valuable hints upon treatment, with a recital of the ways in which we can vary the use of the simple means at our disposal, conclude the paper, which, though somewhat indefinite, is pleasantly written, and will prove instructive to those who have not devoted time to the special study of this subject.

The next two contributions, severally entitled *Historical and Critical Sketch of the various Methods of treating the Pedicle in Ovariectomy*, and *Five Cases of Ovariectomy performed at St. Mary's Hospital, from January 1st to September 18th, 1871*, are from the pen of the same writer, D. LLOYD ROBERTS, M.D., F.R.C.P. Lond. The first, as its name indicates, gives an account of the multiform treatment to which the pedicle has been subjected since the first introduction of the operation by Dr. McDowell of Kentucky. The conclusions arrived at are, that no one method is universally applicable, but that some form of clamp should be used wherever it is allowed by sufficient length of pedicle, while in those cases where we have short, fleshy, and vascular stumps to deal with we must rely upon ligatures cut short, and the actual cautery. The latest forms of clamps are referred to, and wood-cuts of most of them given. Dr. Atlee's new clamp, described in the number of this Journal for April, 1871, is spoken of in terms of approbation, though Dr. Roberts has not yet tested it in practice. The whole subject is comprehensively treated, and the views expressed are fair and apparently unprejudiced. The second paper contains the history of five successful cases of ovariectomy, in which the age varied from twenty-four to forty-nine years. The clamp was used four times; once the

pedicle was secured by ligatures and the ends cut short; three of the tumours were multilocular, one unilocular, and one fibro-cystic; they weighed respectively 23, $19\frac{1}{4}$, $21\frac{1}{2}$, $27\frac{1}{2}$, and 47 pounds. While the cases are well told, their number is too small to draw deductions from, in view of the so much more extended series of observations furnished by others.

Cases and Notes on the Surgery of Prolapsus Uteri and Elongation of the Cervix, by WALTER WHITEHEAD, F.R.C.S. Edin., is an article which partakes largely of the nature of a lecture. Its author regards the utero-sacral ligaments as the principal supports of the uterus, and thinks that sudden or continued pressure of the abdominal muscles and viscera is the general cause of prolapsus, while elongation of the neck of the uterus is in great measure dependent upon continued traction of the primarily prolapsed bladder. The conclusions arrived at are that no operation will be successful when we cannot diminish abdominal pressure. Some cases are appended which Mr. Whitehead thinks may *primâ facie* appear triumphs of obstetric surgery, but in consideration of the risk run and the occasional return of the mischief, he concludes that an operation should be reserved for extreme cases in the failure of all other remedies. The cases reported are fifteen in number, nine being instances of amputation of the cervix, and six of elytrorrhaphy. The peritoneum was opened in one operation of each class without injurious results, while death from pyæmia followed one operation of elytrorrhaphy.

Clinical Memoranda, by J. THORBURN, M.D., Physician to the Manchester Southern Hospital for Women and Children, comprise some notes, rendered imperfect by the illness of their author, on vascular tumours of the urethra, polypoid uterine growths with double attachment, and ovarian tumours, occurring in the practice of the Southern Hospital. In our opinion, notes admitted to be imperfect, and therefore not open to criticism, are hardly worth publishing at all; but in these times not only is the Horatian rule unappreciated or unknown, but nine *days* are scarcely elapsed ere each one rushes forward with a few more pages covered with print as his contribution to an already redundant literature.

Mr. ANDREW BOUTFLOWER, late Senior House Surgeon to the Manchester Royal Infirmary, reports a case of a *Foreign Body in the Urethra and Bladder*, in which Mr. Heath (not Christopher) removed a piece of the stem of a sage plant, three inches long, from the prostatic urethra and neck of the bladder by lithotomy, the offending substance having been introduced by the patient himself. *A Case of Dislocation of the Hip reduced Eleven Weeks after Injury*, by the same surgeon, is also reported by Mr. BOUTFLOWER. The head of the femur rested upon the dorsum ilii, and manipulation proved successful.

Mr. LUND contributes some really valuable *Suggestions for a ready Method of recording Surgical Cases in Hospital Practice*, which will be read with interest by hospital surgeons, who in general have encountered the difficulty which Mr. Lund attempts to obviate. The papers recommended are single leaves with printed headings which vary according to the taste of the reporter, who, striking out those which do not suit, arrives at the characteristics of the case by a process of exclusion. The age, temperament, social condition, state of the urine, termination, and numerous other points are very easily noted in this way. Mr. Lund further advises a system of contractions which appears to be a good one, though individual preference generally decides this in accordance with personal fancy. Lithographs are given, without which we fear the exact character of the special method recommended by Mr. Lund will hardly be understood. We do not know that the ideas are new, nor is such a claim made

for them, but the article is well considered, and will repay perusal by those interested in the subject.

The last paper in the volume, styled *Statistics of English Surgery in Public Medical Charities for the year 1870*, is by the EDITORS, and shows a laudable desire on their part to collect statistics which will carry weight by their number and by the sources from which they are derived. We have long felt that small masses of results are so easily and so often manipulated to suit the views held by their compilers that they are very far from being conclusive arguments. Figures naturally, it is true, do not lie, but that in an abnormal condition they, as well as facts, may become outrageously mendacious, is patent to all. We regret, with Messrs. Bradley and Whitehead, that they have not met with a more general reponse to the inquiries they have set on foot. The operations tabulated are, Amputations, Immediate Dilatation of the Urethra, Ligation of Arteries, Lithotomy, Lithotrixy, and Ovariectomy, but the numbers are too few to be of material value.

In bringing this notice to a close, we can only regret the few cases contained in these reports and the evident difficulty of procuring any materials for an annual volume which appears to prevail in Manchester as on this side of the Atlantic. With hesitancy we would propound the question: is it advisable to publish a book every year whether there is anything to put in it or not? We will be answered, of course, that a great city, as Manchester, furnishes ample material if it were only worked up, and of this we have no doubt; but if men cannot be induced to work it up, the fact remains that valuable material for annual reports is very hard to get. S. A.

We shall now invite the attention of our readers to the medical papers contained in the volume.

On some of the Advantages of Hydrotherapeutics. By THOMAS LEEDS, Lecturer on Physiology at the Sheffield School of Medicine.—The author in writing this article is animated by the desire to draw the attention of the profession to the study of hydrotherapeutics as a part of the system of medicine; and is convinced, not unnaturally, that when a patient at a water-cure establishment is perpetually exposed to sitzbaths, packs, cold shallows, spinal douches, rainbaths, “and so on,” at various times and temperatures, what change may occur in him is to be attributed not alone to change of life, fresh air, and the surrounding scenery. After describing the more important forms of water applications, the author relates several cases which were much benefited by having submitted to them; such cases as are, however, not unfrequently benefited by good food, fresh air, and exercise.

Case of Tubercle of the Cerebellum. By HENRY SIMPSON, M.D., Physician to the Royal Infirmary, Manchester.—This is a case related to illustrate some of the many difficulties lying in the way of positive diagnosis in certain cases of lesion of the brain. A lad of fourteen was admitted to the Manchester Infirmary for treatment of a condition dating back but five months, at which time he was attacked by severe, shooting, intermittent pain in back of the head, most felt on the left side a little above the superior curved line of occipital bone. Vomiting soon followed, with loss of appetite and constipation. He had always been healthy, and there was no history of any right to a constitutional taint of any kind.

Six weeks before admission his “eyes became strange, and he could not walk or talk so well as before.” To these symptoms by degrees were added, gradual loss of sight, increased impairment of speech, and a want of co-ordination in muscles of locomotion. There was also some paralysis of left side of

face, and of the internal recti of both eyes; the paralysis of the recti advancing with the amaurosis which gradually increased. The ophthalmoscope gave proof of the presence of "increased pressure within the cranium due either to effusion or a tumour."

Emaciation set in after a time, but slowly. The temperature never rose to 100°, and fell regularly a degree or two in the evening. There were at no time convulsions.

Death occurred four months after admission. At the post-mortem examination the brain alone was examined. The veins of the dura mater were rather turgid. The visceral arachnoid was slightly thicker and more opaque than normal, especially about the vertex. At the base there was a considerable quantity of serum, and some lymph, principally deposited about the optic commissure and backwards to the anterior margin of the pons. There were no miliary tubercles to be discovered in any part of the membranes. The whole brain was somewhat soft, but otherwise the hemispheres seemed healthy as far as the level of the lateral ventricles, which contained several ounces of turbid serum. The septum was destroyed and the walls of the ventricles were softened so as to be almost diffuent. The venæ Galei were very turgid. The posterior part of the pons and medulla oblongata was very much softened. Both lobes of the cerebellum were softened, and each contained numerous yellow tubercular masses varying in size from a pea to a marble. The right lobe contained a greater number than the left.

Description of a Melanometer. By W. FRANK SMITH, M.B. Lond., F.C.S., Physician to the Sheffield General Infirmary.—In this paper the author describes a simple instrument devised by him for the purpose of measuring rudely the amount of uromelanine present in any specimen of urine. Uromelanine being formed by oxidizing urochrome, which, in turn, is, according to Dr. Thudichum, a product of hæmatocrystallin, the importance of such a means of investigation is evident.

The apparatus in question consists of two concentric tubes so arranged as to give an exact indication of the translucency of the urine under examination after treatment with sulphuric acid.

As nothing more than a description of the instrument is given, the author not having as yet determined the proper amounts of urine and sulphuric acid to be used, it is impossible to judge whether he has attained the desired end.

The Respiratory Movements in Man. By Dr. ARTHUR RANSOME, M.A., M.B.—The author, having found that all attempts hitherto made, whether by means of stethometers or otherwise, to investigate the movements of the chest-walls in health and disease, had resulted in obtaining merely the resultant of these movements, was led to construct an instrument, but imperfectly described in the text and diagrams, "which records upon three dials, with considerable accuracy, the movements of a small rod when it is placed upon different points of the chest-wall." With this the degree of variation in the various motions can be shown graphically by means of lines drawn to a scale, as is done for other purposes. A series of diagrams, representing the chest movements in health and disease, accompanies the paper.

As in both men and women a large part of the respiratory act is, in ordinary breathing, performed by the diaphragm, no information can be obtained from the use of *any* stethometer, except in deep or forced respiration. When this last condition is complied with, the chief movements are forward and upward, the former the more equable of the two, and starting more rapidly at first than the upward motion. In men the upward movement takes place chiefly at the latter portion of the respiratory act.

"In most full-chested men the earliest portions of the expansive act seem to be accomplished by an increase of the action of the diaphragm, then, in an ascending order from below upwards, the ribs are gradually raised by their special muscles, and the lower ribs are probably at the same time straightened at the anterior angle between them and their costal cartilages; at last, for the final effort of inspiration, the head and shoulders are fixed, the spinal column is curved backwards, and all the muscles capable of producing upward movement of the bony cage are excited to their utmost power."

In expiration after this effort, the operation is reversed, the diaphragm gives way first, the abdomen, in spare subjects, collapses, and the ribs descend gradually, the upper ribs commencing the descent first. Many variations may, however, occur through the action of the will, and hence, perhaps, the want of correspondence remarkable between the accounts of different observers. Even in females who display the more truly "superior costal" type of breathing, the lower ribs have slightly the precedence, both in ordinary and extraordinary breathing. The actual extent of motion varies so much in different individuals and in different regions of the chest, that it is impossible to make an accurate average estimate of it, but from numerous observations it seems that the sternum, tied as it is by clavicles and ribs, and capable of moving but forward and upward, has a greater extent of motion than the clavicles; its lower portion moving more than the upper, though not so much as might be expected after observing the play of the lower ribs. This may be due to the hampering effect of the diaphragm and abdominal muscles. At the clavicles and upper two ribs there is but little outward movement; at the third rib, however, this motion is distinct.

The clavicles show more upward than forward movement, and are especially affected by the final effort of breathing. The ribs at their anterior ends move more decidedly upward than the sternum, and in all below the third their forward movement is more marked. With regard to the effect of position on healthy respiration, the author finds, that, when the hands are supported on a level with the head, as in the position ordinarily chosen by asthmatic patients during a paroxysm of dyspnoea, the respiratory movements are most free in all directions.

In women, though the breathing is chiefly costal, there is no increased power of raising the ribs in forced inspiration. As might be expected from the greater mobility of their frames, children possess a large relative power of motion of the chest-walls, while in old age this power is much reduced.

When increased mobility and size are found on either side, they are associated with, and probably due to, increased muscular development of that side. The greatest amount of movement of ribs and sternum was found in those of considerable muscular development. Disease is attended by great variations in these movements. There is probably always a diminution in mobility, which may be confined to one or extend to all the planes of motion. In phthisis probably one of the earliest symptoms of incipient deposit is diminution of movement in the affected side. Later, as softening occurs, there is often greater freedom of motion over the diseased lung. In many cases of disease the upward movement is exaggerated as compared with the forward, as if to compensate for the lung's loss of elasticity. In pleurisy, whilst the upward movement is little, if at all, diminished, the forward is reduced to the lowest possible point, and retained merely enough to allow of the rotation of the rib on its vertebral axis.

Numerous diagrams and tables attest the accuracy and painstaking character of the author's observations.

H. B. H.

ART. XXII.—*Transactions of American State Medical Societies.*

1. *Transactions of the Medical Society of the State of Pennsylvania, at its Twenty-second Annual Session, June, 1871.* 8vo. pp. 384.
2. *Transactions of the Second Annual Session of the Medical Society of Virginia, October, 1871.* 8vo. pp. 116.
3. *Transactions of the Medical Society of the State of West Virginia, June, 1871.* 8vo. pp. 86.
4. *Proceedings of the Second Annual Session of the State Medical Association of Arkansas, November, 1871.* 8vo. pp. 40.

1. THE Twenty-second Annual Session of the *State Medical Society of Pennsylvania* was opened by an address from Dr. S. D. GROSS, President, which is replete with good, practical sense, in reference to medical subjects of a general character.

Following this is a "Report of Six Hundred Cases of Diseases of the Ear," by Dr. TURNBULL, of Philadelphia, in which we do not perceive that there is developed any new fact in relation to the pathology or treatment of any of the prominent ailments of the auditory apparatus.

Next is described a "Case of Thyroid Dislocation of the Hip Joint," by Dr. B. LEE, of Philadelphia, which occurred in the second stage of coxalgia. reduction being effected by manipulation, and restoring to the patient, a female child, the capability of walking erect, for a considerable distance, with the aid of a crutch and cane, and with comparatively little fatigue.

The next paper, by the same writer, describes "A Modification of Taylor's Splint for Posterior Curvature of the Spine."

The paper by Dr. T. H. SQUIRE, of Elmira, N. Y., on a "New Prostatic Catheter," has been already published in this Journal (No. for Oct. 1871, p. 393).

Next in order follow "*Reports*" from seventeen "*County Societies.*" Several of these present interesting sketches of the medical topography, hydrography, and meteorology of the counties from which they emanate, with brief notices of the population, its character, condition, and occupations. Some of the reports embrace also the histories of cases of disease, surgical operations, and of anomalous, complicated, and instrumental cases of obstetrics.

The medical history of those portions of Pennsylvania embraced in the above reports, for the twelve months preceding June, 1871, is in the highest degree favourable. The statement of all the reports is that "*no wide-spread epidemic* has prevailed within our borders." Even the usual endemic diseases have not been met with, either in number or in severity, to the same extent as in former years.

It is a curious circumstance that throughout all those portions of the State that have been heard from, the several forms of periodical fevers are rapidly disappearing. Even in those localities described as the great laboratories of miasmata they are much less prevalent than they were formerly. With the decrease of intermitting and remitting fevers, there is everywhere, on the other hand, a very considerable increase in the prevalence of typhoid fever, generally of a mild character, although in some few localities it was attended with considerable mortality.

Diphtheria has continued to prevail throughout the State, very generally, ever since its occurrence as a wide-spread, devastating epidemic, some ten or twelve years ago. In but few cases, however, during 1870-71, did it assume any of its previous malignancy of character. The deaths caused by it were but

few. The true character of the disease has become better known to our physicians, and in consequence it has been subjected to a more rational and successful treatment. The fruitless attempt made, at first, to arrest the disease by the local application of caustic and various stimulating washes, has been pretty generally succeeded by the better plan of the application of cold to the throat externally, and to the fauces internally, by giving the patient, at intervals, powdered ice, to be gradually swallowed.

Of the eruptive fevers, those reported to have chiefly prevailed were scarlatina and rubeola. The former occurred generally in localities limited in extent, and was, for the most part, of a very mild character. In many of the occurrences of measles, the cases were complicated with affections of the chest and lungs. But even when this was the case, under judicious treatment, the disease was productive of a comparatively small mortality.

In the report from Fayette County, there is an account by Dr. PHILLIPS, of Connellsville, of a few cases "of a very malignant form of puerperal fever." The cases, which were few in number, were confined to a small neighbourhood, occupied almost exclusively by miners, living in small, crowded houses, situated in low, damp localities. Dr. P. was unable to detect any evidence of contagion; other women confined about the same time, within a few yards of those labouring under the fever, and attended by the same physician and nurses, were unaffected. There was prevailing, at the time, in the same community, a tendency to attacks of typhoid fever.

We would call especial attention to the interesting account, contained in the quite elaborate report from the Philadelphia County Medical Society, of the "Relapsing Fever," which prevailed in the county during the years 1870-71. Thousands (over five) of persons were attacked, with an estimated mortality of about 8.42 per cent.

In the same report will be found, also, an account of the *yellow fever* which prevailed in certain localities during the months of July, August, and September, 1870. The mortality amounted to *thirteen* out of seventeen attacked—nearly 77 per cent. Average duration of sickness in fatal cases, only *five* days.

2. The Second Annual Session of the *Medical Society of Virginia* was opened by an excellent address from the President, Dr. ROBERT S. PAYNE.

This is followed by a paper on "Dysmenorrhœa," with special reference to its treatment, surgical and constitutional, comprising the history of four cases in illustration of the views advanced by the author, Dr. JOHN H. CLAIBORNE.

The views set forth by Dr. C., in respect to the character and treatment of dysmenorrhœa, are evidently based upon a close clinical study of the disease. Dysmenorrhœa, Dr. C. very correctly remarks, is to be viewed only as a symptom of disease, and not as a disease of itself. The pain attendant upon "difficult menstruation," may be simply "neuralgic in its character; or, there may be congestion or inflammation of the uterus to account for it; or, it may be dependent on some toxæmic condition of blood, as expressed by the gouty or rheumatic diathesis; or, there may be some obstruction or stricture or flexion of the cervix uteri, diminishing its diameter, and thus damming up the menstrual flow, or preventing the discharge of some adventitious membrane developed from the lining tissue of the uterus; or, there may be a polypoid tumour within the organ, the pain in such case being but the simulation of the process and agony of labour. Each and all of these causes, of course, must be taken into consideration in the investigation of every case we meet with, if we would institute a rational and successful treatment. More than one cause may be present in the same case. We thus often find neuralgia, and engorgement of the womb

and ovaries, and the rheumatic diathesis, all combined to aggravate the sufferings of the dysmenorrhagic patient."

A report from the Committee on Epidemics of the "Tide Water District," is devoted to a consideration of "Paludal Fever," as it presents itself in the miasmatic portions of Virginia. The report is drawn up by Dr. ALFRED T. TEBAULT, and is full and satisfactory. It does not, however, contain anything adapted to throw much additional light upon pathology or therapeutics of periodical fevers.

The report from the "Committee on Epidemics of the Valley District," treats of "Typhoid Fever." It is drawn up by Dr. A. M. FAUNTLEROY. It is short and but little instructive. It is a curious fact, that prior to the appearance of typhoid fever in 1840-41, remittent and intermittent fevers were the prevailing febrile affections of the Valley district of Virginia. Subsequently to the change from the periodical type, in the prevailing fevers of the Valley region, it is remarked that the diseases of the same regions which before had manifested a frank sthenic phase, became decidedly asthenic, requiring a radical change in the remedial measures previously employed. "It is a notable fact," says Dr. F., "that, within the last few years, the periodical forms of febrile diseases are again becoming frequent. Well-defined cases of intermittent fever have come under my observation, occurring in subjects who had never been outside the Valley country."

A short paper, by Dr. F. HORNER, Jr., on the "*Cattle Disease*," has for its object to elicit attention to "the identity of the diseases of the lower animals with those of the human species." We fear, however, that they who seek for the facts and arguments in elucidation of the subject, will search in vain for them in the paper before us.

Another *voluntary contribution*, is the history of a "Case of Rheumatism," by Dr. W. B. GRAY. The peculiarity of the case, which occurred in a lad 12 years of age, is that the attack of acute articular rheumatism gave rise to inflammation, absorption, abscess, necrosis, and finally fracture of bone by muscular contraction.

There is a short paper in favour of the "Hypodermic Method of Treatment," by Dr. W. W. PARKER.

The volume closes with the report of a "Discussion on Inflammation." It will admit of no useful analysis.

3. The fourth annual meeting of the *State Medical Society of West Virginia*, was opened by an address from the President, Dr. W. J. BLAND, from which we quote the following brief sketch of the general topography of the State, and the prominent diseases prevalent within its bounds:—

"On the east the Alleghany Mountains constitute our boundary. They are covered with a dense growth of forest trees, and the country immediately along the range is very sparsely settled. On the west the Ohio river; on the north the Maryland and Pennsylvania State lines, and on the south the Kentucky State line, constitute our boundaries. The difference between the water-level at Glenville, in Gilmer County, and the mouth of the Great Kanawha River, a distance of one hundred miles, is only 337 feet; between Glenville and Weston, in Lewis County, a distance of twenty-seven miles, it is 277 feet; between Weston and Buchannon, in Upshur County, a distance of fifteen miles, nearly 500 feet; between Buchanan and Beverly, in Randolph County, a distance of thirty miles, it is 600 feet; and from Beverly to the summit of the Alleghanies, nearly 1700 feet.

"Along the Ohio River the country is densely populated, and in many of the counties intermittent fever prevails, while in the counties immediately back from the river, it is rarely met with, and as you approach the centre of the

State, I do not remember to have heard of a single original case. I believe there is no locality in the State that is entirely free from typhoid fever.

"Our winters usually commence about the middle of November, or first of December, and continue until the last of March or the first of April. May is often cold. It is with June our summer properly commences. July and August are generally sultry. In September the nights are cool, and the days pleasant. Our climate is very changeable, some days in summer being cool enough to render a fire almost a necessity. I have known heavy frosts to occur in the county in which I live (Lewis) in June, and have experienced days in January and February almost too warm for comfort. These extremes are unfavourable to health, and productive of pleurisies, pneumonias, rheumatisms, etc., often terminating in consumption.

"According to my recollection, scarlet fever and measles have made their appearance about every five years. The first of these diseases is often very fatal. They are both specific in their character, and, no doubt, contagious, and I am not aware that we have as yet a remedy for either. It is conceded, I believe, by almost every intelligent practitioner, that it is not in the power of science to cut short in its course, either scarlet fever, measles, smallpox, or typhoid fever. All that we can expect to accomplish is, by proper attention and therapeutic means, to obviate the secondary affections, which may and often do prove fatal to the lives of our patients."

"The subject of embolism and thrombosis has for the last few years attracted the attention of the profession. Dr. W. Coles, of Parkersburg, has written an elaborate paper on the subject, showing its relationship to other diseases, and demonstrating that it is, in very many, the immediate cause of death."

The first of the papers is on the "Use and Importance of the Microscope to the Medical Profession," by Dr. B. W. ALLEN, in which the author has presented a very fair exposition of the present state of opinion in respect to it.

The second article is on "Sanitary Science; its Study, Cultivation and Present State," by Dr. RICHARD BLUM. To the consideration of this important subject the author has devoted only six medium octavo pages. Notwithstanding the unsatisfactory, loose, and imperfect manner in which the subjects of this paper are discussed, its general positions, so far as they go, are correct and pertinent, however practically valueless.

The third paper, on "Anæsthetics," by Dr. WALTER COLES, presents a tolerably fair outline of the present state of medical opinion in respect to the safety and value of anæsthetics in surgery and obstetrics generally, and of the relative value and safety of the leading anæsthetics now in use. By combining the statistics furnished by Dr. E. ANDREWS, of Chicago, Illinois, with those of Dr. RICHARDSON, of London, England, we obtain the following general view of the absolute and relative mortality caused by the several anæsthetic agents, of which Dr. C. treats in the paper before us, in a given number of carefully reported cases.

Ether	4	deaths to 92,815	inhalations=1	to 23,204
Chloroform	53	" 152,260	" =1	to 2,873
Mixture Chloroform and Ether	2	" 11,176	" =1	to 5,588
Bichloride of Methylene . . .	2	" 10,000	" =1	to 5,000

The above figures the author regards as "the most valuable and reliable that have ever been published in reference to the mortality in anæsthesia. They are, perhaps, above rather than under the mark, and demonstrate a state of facts so absolutely at variance with the received opinions of five years ago, as to become perfectly startling. They indicate that chloroform is eight times more dangerous than ether; twice as dangerous as an equal mixture of chloroform and ether, and, as far as experience goes, it is more fatal than bichloride of methylene. In view of these facts, the question arises, 'Will chloroform maintain its present popularity as an anæsthetic in surgery?' We do not believe it will; unless some method, other than we have at present, is devised to

lessen the risk attendant upon its use, we cannot but think that its popularity must decline. In the face of such figures as we have adduced, chloroform cannot and ought not to supersede ether in hospital practice. The inconveniences attending the use of ether are more than compensated for in the risks from chloroform."

Next in order is a paper on the "Temperature of the Body in Health and Disease, as measured by the Thermometer," by Dr. W. H. SHARP. The study of the temperature of the human body in health at the different periods of life and during disease, its variations in the different forms of disease and at the several stages of each, and, from the various changes found to take place, to deduce the true bearing, if any they have, in reference to the nature and seat of disease, and its favourable or unfavourable course, is a department of pathological diagnosis and prognosis which has only recently attracted the attention of physicians. A general but a very interesting outline of the present condition of the knowledge of the profession in respect to the subject, and of the true estimate of its value when applied to the clinical study of disease, will be found in the paper of Dr. S. To give our readers any satisfactory analysis of the information embraced in the paper would not be possible without extending our notice of it to an objectionable length.

The sixth article is a "Report from the Committee on the Medical Botany of the State of West Virginia," prepared by Dr. A. S. TODD. The author furnishes us with a list of some sixty indigenous plants, with a short notice of their imputed properties as therapeutic agents. Most of them will be found to be included in the lists of indigenous remedies given in our National Dispensatory, and are in daily use by the physicians of most parts of the United States.

The next paper is a "Report on the Topography, Climatology, and Epidemic Diseases of Upshur County, W. V., by Dr. E. S. BRONSON.

A brief but interesting history is presented by Dr. H. I. WIESEL, of five cases of "Trichinosis," occurring in the same family soon after partaking at supper of "raw smoked ham," which, upon microscopic examination, was found to be swarming with *trichinæ*. One of these individuals was a male, 28 years old. After suffering from the presence of trichinæ four consecutive months, he became gradually restored to "all his pristine health and vigour."

Another of the patients was a female, 22 years old. She remained without sleep for the space of 30 days. She made a very rapid recovery, completely regaining her health by the thirty-sixth day from the commencement of her attack. She was then in the third month of pregnancy. Two or three times every day, up to the period of the child's birth, at full time, she experienced attacks of fainting. After delivery, which was perfectly natural and easy, both she and her child remained in perfect health.

Another of the party, a female infant two and a half years old, daughter of the latter, ate a very small piece of the ham. On the forty-fifth day she began to improve, and was, at the date of Dr. W.'s paper (June 7, 1871), "a healthy, robust child."

A female ate a small piece of ham, on the fourth day after she felt pain in all her limbs, and in the bowels. Had diarrhoea, with tenesmus. Took purgatives. Was well about the twelfth day.

Another female, on the fourth day after partaking of the ham, felt pain in the arms and legs. In the latter the pain continued until the fortieth day. At first there was inability to extend the legs. Took purgatives from the first day of the attack, and was soon relieved of her abdominal pain and diarrhoea.

The remaining two papers are devoted each to the description of a new in-

strument. One for "the treatment of fracture of the lower jaw," by Dr. P. B. DAVIS; and the other of an "improved tonsillotome," by the same gentleman.

The description of either instrument would scarcely convey a correct idea of its construction, without the drawings by which the original papers are accompanied.

4. The communications read during the session of the *State Medical Society of Arkansas* were:—

1st. "A Sanitary Survey of the City of Little Rock," by Dr. R. G. JENNINGS, which, though very short and superficial, leads to the general conclusion "that Little Rock is rightly to be considered a decidedly healthy city."

2d. "Knee-Joint Amputations," with the report of two cases, by Dr. W. W. HAWKINS. "In the two cases reported, the antero-posterior flap, with retention of the patella, was adopted, though the condyles were shaved off." The latter procedure, however, Dr. H. considers unnecessary, and in future operations has decided to follow the method pursued by Dr. STEPHEN SMITH (*American Journal of the Medical Sciences*, 1870); which, Dr. H. remarks, certainly admits of a more thorough drainage, and places the cicatrix in a position less liable to be pressed upon by an artificial limb—two circumstances not to be disregarded.

3d. "Case of Malarial Hæmaturia," by Dr. E. R. DU VAL. The most prominent symptoms in this case were intense nausea, bloody urine, and excessive prostration. The energies of both body and mind "seemed in bonds to an influence, lion-like in power." The whole system appeared to have nearly attained the point of saturation with malarial poison—its poisonous action upon the ganglionic system doubtless was the cause of such varied and rare morbid manifestations. The clear indication was to support the system and to give quinia freely. The first it was difficult to accomplish, because of the gastric irritability, the latter was carried out as far as practicable by injections into the rectum.

It would appear from the current medical literature that the form of disease under consideration has recently prevailed in Texas, Louisiana, and Mississippi, occasionally with much fatality.

The volume closes with a short paper entitled "Climatology; Remarks on the Climatology of the United States," by Dr. GEO. W. LAWRENCE. It merely points out the vast importance of a complete series of observations, illustrative of the climatology of all portions of the country, and the best means of collecting, preserving, and collating such facts.

D. F. C.

ART. XXIII.—*Pulmonary Consumption; its Nature, Varieties, and Treatment. With an Analysis of One Thousand Cases to exemplify its Duration.* By C. J. B. WILLIAMS, M.D., F.R.S., Senior Consulting Physician to the Hospital for Consumption, Brompton; and CHARLES THEODORE WILLIAMS, M.A., M.D., Oxon., Physician to the Hospital for Consumption, Brompton. 8vo. pp. 315. Philadelphia: Henry C. Lea, 1872.

THE elder Dr. Williams is well known in this country as the author of a work on the "Pathology and Diagnosis of Diseases of the Chest," and of numerous contributions on the same subject to periodical literature. During a period of nearly fifty years, he says, the nature of pulmonary consumption has been the

object of constant study. In early life he enjoyed the advantages of the teachings of such men as Alison, Laennec, Andral, and Chomel, and he has since had numerous opportunities, in both hospital and private practice, of observing the disease and of studying its post-mortem appearances. In the preparation of the present work he has been assisted by his son, Dr. C. T. Williams, who contributes chapters on "Family Predisposition and Certain other Causes of Consumption," "Hæmoptysis and the Hæmorrhagic Variety of Consumption," "The Duration of Pulmonary Consumption," and some of the chapters on the treatment of the disease.

Dr. Williams, although a pupil of Laennec, soon perceived that his view of the nature of consumption was too exclusive. It appeared to him much more probable that it arises—no matter under what form—"from a decline or deficiency of vitality in the natural bioplasm or germinal matter, and this deficiency manifests its effects not only in a general wasting or atrophy of the whole body, but in a peculiar degradation, chiefly in the lungs and lymphatic system, of portions of this bioplasm into a sluggish, low-lived, yet proliferating matter, which, instead of maintaining the nutrition and integrity of the tissues, clogs them and irritates them with a substance which is more or less prone to decay, and eventually involves them also in its own disintegration and destruction." This degraded bioplasm, which he calls phthinoplasm, may be thrown out locally, as a result of inflammation, or it may arise more spontaneously in divers points of the bioplasm in its ordinary receptacles, the lymphatic glandular system, and then it commonly appears in the form of miliary tubercles, scattered through the adenoid tissue of the lungs. It will appear from the above that Dr. Williams does not look upon phthisis and tuberculosis—words which he, nevertheless, constantly uses rather loosely—as identical conditions, but the distinction between them is not so distinctly pointed out by him as has been done recently by some of the German pathologists. While admitting, as we have already said he does, the inflammatory origin of many cases of the former disease, he thinks that in others it arises from a degraded modification of the common nutrition of the tissues of the lungs, entirely independent of inflammation.

The true tubercle he traces to a hypertrophy of a glandular tissue which he believes to be extensively distributed throughout the lungs, and which he calls adenoid tissue. This tissue is occasionally excited to increased growth, and in this way performs an essential part in the formation of miliary tubercle. The predisposing and exciting causes of this hypertrophy are not so clearly stated as we could wish, and appear to be various. Dr. Williams goes beyond Niemeyer and his followers in asserting that these miliary tubercles are sometimes themselves the direct results of inflammation. In the greater number of instances, however, he refers them to an altered condition of the blood, and hence their occasional occurrence after scarlet fever, and some of the other acute exanthemata. More frequently, however, this alteration of the blood is brought about by chronic disease, as by phthisis, scrofula, and prolonged suppuration. He does not apparently agree with Oppolzer, who believes that this effect is produced by the absorption of corpuscular bodies, which, when they are taken into the blood, give rise to an extravasation of white blood-corpuscles in the lungs or in some of the other organs of the body, which, with an outgrowth of connective tissue, form, in the opinion of the latter, miliary tubercles. Under the influence of depressing causes, such as deficiency of light and food, a vitiated atmosphere, depressing emotions, and the like, the external glands of the body may undergo enlargement, and from a similar cause these minute glandular bodies may become hypertrophied. This theory of the origin of tubercles certainly has the advantage that it will explain all cases of tuberculosis, while that of

Niemeyer fails in those rare cases in which no previous caseous degeneration of the lungs or glands, or any disease which he has particularized as likely to be followed by tuberculosis, can be found. In both cases, moreover, there is "an excessive multiplication of perishable cells doomed to speedy decay." These cells, he says, have the closest resemblance to leucocytes, and there are good grounds for believing that they are identical not only with them, but with the corpuscles of fibrinous exudations and with pus-cells.

In regard to the occurrence of consumption after the cessation of habitual discharges, Dr. Williams says: "The sudden healing of old ulcers and of the suppurating wounds of setons and issues is often quoted by authors as a cause of pulmonary consumption; but it is not clear that the cessation of the discharge may not be due to the morbid change in the lungs having already begun. Compared with the artificial production of tubercles in animals, which we shall hereafter notice, it appears as likely that the presence of pus in any part, whether by production or inoculation, may have a deteriorating influence on the sarco-phytes (leucocytes) of the blood and lymphatics, as that the cessation of supuration should have a similar effect. But it is quite rational—and perhaps the safest view—to admit both influences in different cases."

The statistical part of the work, as we have already said, was confided by the author to his son, and is based upon one thousand cases. The space at our command will only permit us to give a few of the results of Dr. Williams's experiences. They are as follows:—

Phthisis was preceded by pleurisy and pleuro-pneumonia in 149 cases; by bronchitis in 118; by scrofulous abscesses in 12, and by hooping-cough in 6. The number arising from pleuro-pneumonia and bronchitis is very large, reaching a total of 267, or more than one-quarter of the whole, and deserves attention as showing statistically the influence of these diseases as direct sources of consumption. Of the 1000 patients, 198 are ascertained to have died, and the greater part of these succumbed to the gradual waste and decay of phthisis; 15 died of phthisical complication.

8	patients	lived	1 year	and under	2,
22	"	"	2 years	"	3,
18	"	"	3 "	"	4,
23	"	"	4 "	"	5,
24	"	"	5 "	to	9 inclusive,
31	"	"	10 "	"	14 "
12	"	"	15 "	"	19 "
9	"	"	20 "	"	30 "

Average duration of disease in 119 males (dead) 8 years 4.72 months.

" " " 70 females (dead) 6 years 8.67 months.

The results of the influence of age and sex on the duration of consumption may be thus summed up:—

1stly. The duration is longer in proportion as the age of the attack is later, the retarding influence of age being more conspicuous among males than among females.

2dly. Among the females the time of attack is, on the average, earlier than among males.

3dly. The duration of the disease is shorter.

4thly. The age reached by consumptive females is less.

In 12 per cent. of the one thousand patients a direct hereditary predisposition could be traced, and in 48 per cent. a family predisposition. Family predisposition was found to be much more common among women than among men.

The transmission of phthisis is more common through the mother than through the father. Fathers transmit more frequently to sons, and mothers to daughters, than the converse. A family predisposition to phthisis hurries the onset of the disease and thus shortens the duration of life. Of the 1000 patients, 625 were males and 375 were females. The average age and time of attack for males were 29.47, for females 26.06.

In regard to the relation which hæmoptysis bears to phthisis, Dr. C. T. Williams says, that he has generally been able to detect signs of disease during life in the lungs of all those patients who have had extensive hæmoptysis, in connection with heart disease, injury to the chest, or disorder of the menstruation. It is very probable that this may be true, as a rule, but it is inconceivable that hemorrhage may not occur in a few instances simply from want of nutrition of the walls of the bloodvessels, where no disease of the lungs can be detected by the physical method of diagnosis. He refers to one of Niemeyer's cases, in which hemorrhage was supposed to have induced the disease, and in which the physical signs gave evidence of disease of the apex of one lung. This, he says, is surely a strong argument against a hemorrhagic origin for the disease; for blood effused from the bronchial mucous membrane must obey the laws of gravity, and flow towards the lower portions of the lungs. This does not seem to us necessarily true. If the hemorrhage be large in amount and come from the apex of the lung, most of the blood will be expectorated, but a little may flow into the air-cells and remain there exciting inflammation when decomposition takes place. The same thing may happen when there is only a slight oozing of blood. It is difficult to understand why blood may not remain under these circumstances at the upper part of the lung as well as mucous or softened caseous matter. In regard to the setting up of inflammation by extravasated blood, the writer of this notice would say that he has often noticed an increase of temperature in patients a few days after the occurrence of a hemorrhage, which could be attributed to no other cause than this.

Several chapters are almost wholly taken up with the reports of cases illustrating the different forms of consumption, and these, we have no doubt, will be regarded by many as among the most valuable in the book. We commend those chapters of the book in which the treatment of phthisis is discussed to the attention of those physicians who think that the adoption of the theory that inflammation is sometimes the exciting cause of phthisis, must of necessity lead to errors of practice. Dr. Williams seems to have held, for the past fifty years, the same views of the nature of the disease as he now holds, and to have prescribed in accordance with these views, and yet he is able to say, "When I state that the average duration of life of phthisis has, during my experience of forty years, been at least quadrupled, or raised from two to eight years, I say what is below the actual results, as calculated by my son; for, of the 1000 cases, 802 were still living at the last report, and many of them are likely to live for years to come." The formulæ which Dr. Williams has found most useful in the management of consumption and its complications are introduced into this part of the book. They have been useful in his hands, and others will no doubt find them adapted for the conditions in which he recommends them.

The last chapter is on the subject of climate, and is by Dr. C. T. Williams.

Our notice of Dr. Williams' book cannot be better brought to a close than by an expression of the pleasure and profit we have ourselves derived from reading it, and under these circumstances we have no hesitation in recommending it most cordially to the profession.

J. H. H.

ART. XXIV.—*On the Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine, in its Connection with Modern Doctrines.* By J. HENRY BENNET, M.D., M.R.C.P. Second edition. 8vo. pp. 190. London: J. & A. Churchill, 1872.

The same. New York: D. Appleton & Co., 1871.

THE first edition of this book, which was published in 1866, and briefly noticed in the October number of this Journal for 1868, was a purely clinical treatise. In the second edition the author has, however, thought proper to extend the scope of his work by adding a chapter "On the Intimate Nature and Origin of Tubercle." He has also introduced the reports of several cases illustrative of the cure and arrest of pulmonary phthisis, and devotes several pages to answering the questions, "What are cured consumptives to do in life? Can they marry?"

The author is evidently a great admirer of Professor Bennett, of Edinburgh, whom he calls his namesake, and whose views on the pathology of phthisis he considers much more correct than those professed by the German pathologists. Inasmuch as his quotations from the latter are all second-hand, we may be pardoned for saying that his want of knowledge of the language is the reason of the very partial knowledge he has of them. Otherwise he would scarcely say that tubercle was regarded by all German pathologists as a growth of connective tissue. Niemeyer, Oppolzer, and Waldenburg, while making a distinction between tuberculosis and phthisis, which we think is clinically as well as pathologically demonstrable, and believing that the latter is generally the result of a previous inflammation, all state that miliary tubercles are depositions from the blood; the last, and we believe at least one of the others, holding that they are largely made up of extravasated white blood-corpuscles, which may or may not excite a growth of connective tissue in their immediate vicinity. Dr. Bennet is, moreover, afraid that the general adoption of the theory of the inflammatory origin of phthisis will induce many physicians to have recourse to the use of antiphlogistics in its treatment. Although it can scarcely be urged as an objection to a well-founded theory, that it may lead to occasional errors of practice, we do not see how this is likely to arise from the adoption of the theory in question. Is Dr. Bennet not aware that it is no longer the fashion to treat even frank inflammations by antiphlogistic remedies, and that *a fortiori* the restorative treatment would be prescribed in an inflammation which is confessedly of low grade? Niemeyer, it is true, advises occasionally the local abstraction of a small amount of blood, but he also recommends, among other things, rest, and the pill to which his name is generally given, composed of quinia, digitalis, and opium, which can scarcely be looked upon as debilitating in its therapeutic action. Our author does not seem to have noticed in the passage which he quotes from the article on Pulmonary Consumption in Reynolds's *System of Medicine*, that Professor Bennett there states that when an individual is predisposed to phthisis, "any accidental irritation of the lungs, often inappreciable and undetectable, causes a limited congestion here and there in the pulmonary organs, which terminates in more or less exudation of the liquor sanguinis. This exudation coagulating causes the miliary and infiltrated forms of tubercle previously described, which, partaking of the diminished vital power of the organism, instead of being transformed into the pus characteristic of a similar exudation in a healthy person, produces the small, irregular, and imperfect bodies called tubercle corpuscles. Instead of

cells which are rapidly produced, broken down, and absorbed, as in pneumonia, we have numerous molecules and bodies resembling ill-formed nuclei. In short, we have a chronic exudation in which the vitality is so lowered that it tends to disintegration, and to produce the lowest kinds of organic forms, *i. e.*, molecular granules and nuclei. It seems to us that the only material difference between Niemeyer's views and Professor Bennett's is that the latter does not make a distinction between tuberculosis and phthisis.

Dr. Bennet is again wrong in saying that the German school of pathologists deny the influence of a hereditary or acquired predisposition to phthisis. This is most distinctly admitted by Niemeyer and Oppolzer, for the *Vulnerabilität* of the former can hardly be better translated than by the word predisposition, and the testimony of the latter on this point is given in an even more unqualified manner. The constitutional condition which attends phthisis is therefore as distinctly admitted by these and other distinguished observers as by Professor Bennett himself, to consist in a depression of the function of nutrition.

Although believing that a certain number of cases of phthisis are capable of cure, Dr. Bennet expresses the opinion that it is decidedly more prudent, more judicious, even for thoroughly cured consumptives, not to return to active life, unless socially or morally obliged to do so. Of course, in cases in which the disease is merely arrested, it is even more important that the patients should abandon active and ambitious careers. In regard to the question of marriage, he says that the dangers of matrimony for consumptives differ according to sex. In men there is often an absence of proper discretion, and consequently marriage is an additional cause of debility and exhaustion. In women the danger is different; marriage does not with them try or fatigue the constitution to any great extent, unless followed by uterine disease, or by pregnancy, the latter of which is very apt to occur, inasmuch as five women out of six are fertile. Thus, the consumptive will most likely have to encounter pregnancy, confinement, and nursing, with all the attendant shocks and drains on the vitality. As a result, pulmonary phthisis is constantly accelerated and rendered fatal. A woman with a predisposition to consumption is therefore more likely to have it developed into actual disease than a man with a similar tendency. A man, the author thinks, once he has emerged from the phthisical diathesis, may marry and have children who may be strong and live. But he should be careful to choose a young and healthy wife, of a healthy stock, born and bred in the country; he must be discreet in married life, and he must bring up his children hygienically, in the country, devoting them to country pursuits.

The part of the book which still remains to be noticed is devoted to the discussion of the treatment of consumption by hygiene, climate, and medicine, and of the author's views on these points we have no criticism to make. Dr. Bennet has had unusual advantages in the study of the disease, having himself been a sufferer from it, and certainly adopted in his own case a course of treatment which has been attended with most favourable results. We therefore commend this part of the book to our readers as containing the advice of a man who is entitled to speak authoritatively.

J. H. H.

ART. XXV.—*On the Treatment of Fractures of the Limbs.* By SAMPSON GAMAGE, F.R.S.E., etc., 8vo. pp. xvi., 296. London: J. & A. Churchill, 1871.

MR. GAMAGE, who as a writer is already favourably known to American surgeons, adopts, as a motto for his volume, the familiar lines of Horace, which

prescribe that the date of publication should be postponed until nine years after that of authorship, and begins his preface by quoting, from Mr. Trelawny's not very creditable volume of "Recollections," an anecdote of Lord Byron, who, it appears, being invited to put his thoughts on paper, declined to do so until he had had an opportunity to "chew the cud" previously.

We quite agree with Mr. Gamgee that authors of surgical works should think long and carefully before they write, and should duly consider what they have written before they print; but if they follow the plan which he avers he has himself pursued, of not publishing their thoughts till these have become old, they must not be disappointed if their works strike the reader as being less fresh and attractive than they would have been had they not undergone the drying process so thoroughly.

Mr. Gamgee's volume is an elaborate, earnest, and, upon the whole, able argument in advocacy of the universal employment of immovable apparatus in the treatment of fractures; and he evidently believes what he repeatedly asserts by implication if not directly, that it is merely the innate and invincible obstinacy and perverseness of surgeons in general, and their weak and blind reverence for authority, that prevents them from all seeing with his eyes and at once adopting his opinions.

We have been not a little amused at the account which Mr. Gamgee ingeniously gives of an interview which he had with the illustrious Malgaigne, and in which he undertook to show the French professor the error of his ways: "I took occasion," he says, "of a visit to St. Louis, to discuss with the very learned commentator of Ambroise Paré, some of the questions in the treatment of fracture, which had been the theme of controversy in his great works and in my memoirs. I flattered myself that I had successfully answered Monsieur Malgaigne's objections, on the basis of fact, when he convinced me of the hopelessness of the endeavour, by remarking—'*Alors, monsieur, les faits chez vous ne sont pas tels que les faits chez nous.*' It had not previously occurred to me," adds honest Mr. Gamgee, "that English and French surgical facts were different." Is it not sufficiently evident that "the very learned commentator of Ambroise Paré" meant not to say that English and French facts were different, but politely to insinuate that the "facts" with which his opinions had been opposed were no facts at all?

There is, to our mind, a great deal that is sound in Mr. Gamgee's teaching, and, at the risk of being set down as a blind follower of authority, we must add, some little error. We quite agree with the author that in almost every case reduction of a fracture should be practised as soon as possible, and that, in the case of the long bones, the neighbouring joints should be fixed by the splint or other apparatus employed; but we most emphatically dissent from the doctrine that circular compression of the limb at the seat of fracture is either necessary or desirable; on the contrary, we believe this to be one of the most mischievous and reprehensible practices that has ever been introduced in the treatment of these injuries.

The practical part of Mr. Gamgee's volume gives a clear and satisfactory description of the author's mode of applying immovable dressings, but really contains nothing that is new or that is not already familiar to all reading surgeons. Mr. Gamgee, in speaking of the starched bandage, very properly remarks that the bandage is in itself a comparatively unimportant part of the apparatus, the even and careful padding of the limb, and the application of pasteboard or other suitable splints, being the most essential parts of his mode of treatment.

We have no particular antipathy to immovable dressings in themselves, and

frequently employ them, in some form or other, in the later stages of fractures, when the repair of the injury is tolerably well advanced; but for recent cases they seem to us in no respect better, and in some respects not so good as other forms of apparatus. Nor are we at all dismayed by Mr. Gamgee's array of "facts," for equally convincing "facts" can be and have been adduced in favour of every conceivable mode of treatment. Take, for instance, the case of a fractured thigh. Mr. Gamgee tells us of one which he cured without shortening, there being "no difference whatever in the shape or length of the two lower limbs;" but do we not all know that equally good results have been claimed from the use of Smith's anterior splint, of the weight extension apparatus, and probably of every other instrument ever devised for the treatment of these cases? In what respect are Mr. Gamgee's facts better than those of other surgeons? For our own part, so sceptical are we as to so-called facts, that we gravely doubt whether any fractured thigh was ever cured without shortening by any method whatever; but should we accept Mr. Gamgee's facts we certainly could not reject the facts of other surgeons equally skilful and trustworthy.

Here, it seems to us, is a weak point of Mr. Gamgee's volume; the few (and he confesses that there are very few) who agree with him, are independent thinkers, and arrive at just conclusions; but all others are victims of "the paralyzing influence of routine," or of "the disturbing effect of plausible innovations," and either "prefer to have their thinking work done for them, and find it most congenial to their taste to move along in obedience to traditional impulse on beaten ways," or from "servile obedience to authority," fly to the other extreme, "once the yoke is broken," and illustrate the aphorism that "credulity and infidelity are extremes that often spring from and revert to a common source." Now, what we ask of Mr. Gamgee is that he should "put himself in our place," and say plainly whether we and others can reasonably be expected to adopt his convictions—because they are his—instead of our own; and whether he really thinks that the fact that others differ from him in opinion necessarily proves them to be either ignorant or incompetent. That Mr. Gamgee is intelligent we know from the excellent surgical work which he has done, and that he is perfectly sincere and honest is evident from every page of the volume before us; but we insist that the sole test of intelligence and sincerity in others shall not be a willingness to adopt his views.

Looking at Mr. Gamgee's book (which, by the way, is printed with extreme inaccuracy), as a whole, we are forced to believe that it will not much advance his reputation as a surgical writer. His pathological views—as to the process of repair in fractured bones, for instance—are not very modern, and have evidently not been revised since 1862, when he tells us his lectures were first delivered; while the clinical observations which he records fail, as we have already mentioned, to bring to our minds that conviction of the superiority of his mode of treatment over that of others, which is manifestly expected. We are not even convinced by the parenthetical remarks in Chapter VI. on the subject of digital compression of arteries, that this is an important remedy for surgical inflammations, though we believe it to be a valuable resource in certain cases of aneurism. Besides, we are constantly shocked by the very laudatory terms in which the author speaks of himself and his own devices, and the very contemptuous references which he makes to other surgeons, living or deceased, who are in no degree his inferiors. We will only instance his remarks upon Prof. Lister's mode of treating compound fractures, and his criticism upon his old antagonist, M. Malgaigne, which is really worthy of being quoted. "Full of learning but deficient in judgment, a keen critic, but an awkward manipu-

lator, Malgaigne exercised an influence on the surgery of France, from which it has scarcely recovered. His commentary on the works of Ambroise Paré is a monument of erudition, but"—mark the sequel—"his Treatise on Fractures and Dislocations is a singular specimen of poor surgery." The last volume of the *Traité des Fractures et des Luxations*, was published seventeen years ago; will Mr. Gamgee allow us to express the hope that his volume will in 1889 occupy as high a position in surgical literature as that "singular specimen of poor surgery" now does in all portions of the civilized world? J. A., JR.

ART. XXVI.—*Neuralgia and the Diseases that resemble it.* By FRANCIS E. ANSTIE, M.D. (Lond.), F.R.C.P., Senior Assistant Physician to Westminster Hospital, etc. 8vo. pp. viii., 296. London and New York: Macmillan & Co., 1871.

The same. New York: D. Appleton & Co., 1871.

IN this book Dr. Anstie claims for neuralgia a more independent position than it sometimes occupies, as a sort of appendage or symptom of various diatheses or diseases, and also puts forward a definite theory as to its nature and seat. The chapters in which these subjects are treated the author considers the most important in the book.

It will be found, however, that the work is as far from mere empty theorizing, on the one hand, as it is, on the other, from the self-styled practicality which affects to despise all carefully elaborated theories, merely because it dignifies its own crude guesses with the name of facts.

The first chapter gives the clinical history of neuralgia. The author considers the painful points of Valleix to be secondary symptoms developed in old neuralgias. Migraine, or sickheadache, is the youthful form of a more characteristic trigeminal neuralgia of later years. Angina pectoris is, on account of its importance, and its forming as it were a disease by itself, more completely treated in this chapter than the other neuralgias. The most efficient constitutional treatment is said to be the phosphate of iron, strychnia and quinia, and especially arsenic. For the paroxysm, ether and nitrite of amyl are recommended.

Under the head of complications are briefly described the nutritive changes of the skin and its appendages, the periosteum and the eye, the perverted secretions and the lesions of motility and ordinary sensation.

In Chapter III. Dr. Anstie first shows how frequently neuralgia is connected with other neuroses in the same patient, or occurs in members of neurotic families. Then, dwelling upon the character of the complications, the manner in which neuralgias affect groups of nerves having near anatomical connections with each other, the anatomical changes connected with the neuralgic pains of locomotor ataxy, and many physiological facts and theories, he concludes (in the book the conclusion comes first), that "the essential seat of every true neuralgia is the posterior root of the spinal nerve in which the pain is felt, and that the essential condition of the tissue of that nerve root is atrophy, which is usually non-inflammatory in origin."

The chapter upon treatment contains no startling announcements of wonderful new remedies, but a clear and reasonable statement of the advantages to be derived from the different agencies employed, among which hypodermic morphia, atropia, strychnia, iron, good, and especially fatty, food, and last but not

least, the constant galvanic current, hold the chief places. Iodide of potassium and quinia may be used in special cases. Zinc and phosphorus do not seem to be highly esteemed. The remarks upon religious and intellectual training, as well as those upon the same subject in the chapter upon etiology, are of the highest interest and importance, and would prove, perhaps, quite as instructive to the clergyman or teacher, as to the physician.

The second part treats of the differential diagnosis of diseases resembling neuralgia, namely, myalgia, spinal irritation, pains of hypochondriasis, locomotor ataxy, cerebral abscess, alcoholism, syphilis, rheumatism, gout, peripheral irritation, including colic, and dyspeptic headache. It may be seen from the number of important subjects suggested in this sketch, that the book is one which, from the condensation of its style and the absence of "padding," ill bears an attempt to compress its leading ideas into small compass, and we therefore can sincerely advise its thoughtful perusal both by the theorist and the practitioner.

R. T. E.

ART. XXVII.—*The Skim-milk Treatment of Diabetes and Bright's Disease, with Clinical Observations on the Symptoms and Pathology of these Affections.* By ARTHUR SCOTT DONKIN, M.D., Edin., Lecturer on Medical Jurisprudence and Toxicology in the University of Durham. 12mo. pp. 317. London: Longmans, Green & Co., 1871.

DR. DONKIN is known in this country as the author of a series of papers in the *Lancet* on the milk treatment of various diseased conditions, especially of diabetes and of Bright's disease, and the interest which these have excited had induced him to publish the present volume. He has not, however, restricted himself to reproduce his original contributions in their previous form and scope, but has written an entirely new essay on a broader basis.

A full history of the milk treatment of disease is given in the first chapter; the physical, chemical, and therapeutic properties of milk, and its relation to the process of nutrition, being detailed in the next two chapters. The symptoms and pathology of diabetes are next described, and discussed; and, finally, the various plans of treatment of the disease which have been hitherto in use are subjected to a critical review by the author, who then gives his reasons for preferring the skim-milk treatment to all others. The remaining portion of the book is devoted to the consideration of the pathology, symptoms, and treatment of Bright's disease of the kidneys. We shall, however, notice only those chapters in which the treatment of these diseases by skim-milk is proposed. The other chapters contain little that is not generally known by well-informed members of our profession. We may say, however, in passing, that Dr. Donkin thinks that fatty substances, when taken as food, have a tendency in the diabetic subject, especially if the disease be far advanced, to become converted into glucose, and should therefore never form a part of his diet.

It occurred to Dr. Donkin that if milk did produce an injurious effect in diabetes, or if it failed to act beneficially, this might possibly be dependent on the presence of the large quantity of fatty matter it contains. The objection is usually made to its use in the treatment of this disease, that it contains from four to six per cent. of sugar of milk, or lactic acid, which is supposed to be readily converted into diabetic sugar in the system; but lactic acid, when it is administered as a constituent of milk, is converted into lactic acid (the casein of the milk

probably acting as a ferment), which is incapable of being converted into glucose. Skim-milk contains, therefore, not only casein, and solutions of various salts, but also a saccharine alimentary principle, capable of being assimilated in spite of the disease, while only a very small percentage of fatty matter remains if the cream has been thoroughly separated from the milk. Generally this may be done by allowing the milk to stand for some hours, but in some cases it is necessary to pass it through a filter. When milk is thus administered, it is said, in cases of diabetes, to remove the sugar from the urine, and to cure the disease, even when the meat regimen has completely failed after a protracted trial to accomplish this result.

The form of Bright's disease in which Dr. Donkin has found the skim-milk treatment to be most frequently followed by success is fatty degeneration of the kidney; in fact, he does not recommend it at all in the other two forms of chronic disease of these organs. In this disease, besides furnishing to the patient a highly nutrient and easily assimilated food, the skim-milk treatment has other advantages. Prominent among these is the diuresis produced by it, which of course relieves the renal tubules of the accumulation of fatty cells, and permits the kidneys to resume their proper functions.

In regard to the mode of administering the skim-milk, Dr. Donkin says it should constitute, when the treatment is fully instituted, the sole article of food, until the sugar in the one case, and the albumen in the other, has disappeared from the urine; and it is not to be given in large quantities at a time, but in small and carefully measured quantities, and at regular intervals. "During the first day of the treatment, half a teacupful of skim-milk may be given every two or three hours, and on the second day, double the quantity at the same intervals; on the third day, half a pint may be allowed for each dose, and the intervals increased to three or four hours, so that, in all, three pints are consumed; on the fourth day, four pints may be given; on the fifth or sixth, five pints; and should this augmented quantity produce no inconvenience, and the patient's appetite be good, as it generally is under the treatment, the quantity may be raised to six or seven pints daily, but after this no further increase should be permitted, except in certain cases in patients of large frames and keen appetites, to whom eight or even nine pints may be allowed."

The histories of several cases of diabetes and of several cases of fatty degeneration of the kidneys are given. In the former set of cases, the effect of treatment is said to have been almost magical, twenty-four hours being generally sufficient for the production of a marked improvement. The feeling of debility and the emaciation which are such common attendants upon the disease, soon disappear; the urine diminishes in quantity, and will be found to contain less sugar; the patient ceases to suffer from thirst, voracious appetite, and dryness of the skin, and, in cases in which the disease has not been of very long continuance, a permanent cure is said to have been effected.

In Bright's disease the results obtained are claimed to have been scarcely less remarkable, the treatment having caused the disappearance of albumen from the urine in many cases which had been unsuccessfully treated by other remedies, and in other and incurable cases having produced great relief.

J. H. H.

ART. XXVIII.—*A Practical Treatise on Bright's Disease of the Kidneys.* By T. GRAINGER STEWART, M.D., F.R.S.E., Physician to the Royal Infirmary. Lecturer on Clinical Medicine, etc. Second edition. 8vo. pp. 334. New York: William Wood & Co., 1871.

THE additions to the second edition of this excellent treatise are comprised mainly in new information on the subject of clinical history and treatment, embodied in reports of additional cases occurring in the practice of the author. The views upon the pathology announced in the first edition are continued here, the author having found no reason to depart from them in any essential particular. They are practically those of the German school of pathologists as represented by Virchow, and their repetition here may be useful.

1. The *inflammatory form*, of which there are three stages :—
 - a. That of inflammation.
 - b. “ fatty transformation.
 - c. “ atrophy.
2. The *waxy or amyloid form*, of which, also, there are three stages :—
 - a. That of degeneration of vessels.
 - b. “ secondary changes in the tubes.
 - c. “ atrophy.
3. The *cirrhotic, contracting, or gouty form*.

We wish our own limited experience would justify the adoption of such a sharply defined relation between the divisions of class (1) as is involved in this classification; for, if this were the case, the subject would be greatly simplified. We have, however, so constantly met cases of fatty kidney, and of contracted kidney independent of gouty history, which could in no possible manner be traced to inflammatory origin, that we have not felt justified in adopting the views of the great Berlin pathologist and his school. Dr. Stewart, however, appears to have had good opportunities for arriving at an accurate knowledge of the appearances and minute changes in the Bright's kidney, in his former position of pathologist to the Royal Infirmary of Edinburgh, and if his views are based upon observation, as they seem to be, great credit attaches to himself, and additional lustre is reflected on the name of Virchow.

We are, however, surprised that one who has had the liberal opportunities which Dr. Stewart seems to have had, should not have indicated in classification the wide difference which evidently exists not only in gross appearances, but also in the minute changes, in two forms of fatty kidney, whatever be their mode of origin. We allude to those conditions commonly implied in the terms *large white* and *yellow fatty kidney*. The appearances of these organs are quite sufficiently distinct to justify a separation even if it be made subordinate to a primary division, in which they both are included. The first of these forms, often spoken of as chronic tubal nephritis, is undoubtedly often a sequel, or, if it is preferred so to call it, a *second* stage of acute nephritis. But the second, attended by dropsy and highly albuminous urine, numerous oil-casts and much free oil, would seem often, at least, to have a different origin. This additional form, upon which we insist as sufficiently distinct, is also different from the fatty kidney, to which the author devotes a supplemental chapter, and to which he alludes on page 19 of this edition as follows: “ I would only in this place remark, that while fatty degeneration undoubtedly results from inflammation and constitutes one of the most prominent features of its more advanced stages, it also occurs in the other forms of Bright's disease, and is often exceedingly pro-

nounced in cases not referable to this category at all, not being associated either with albuminuria or dropsy."

With the remainder of the classification, as embodied in (2) we have no difference, though we have never seen sufficient reason for making a separate form of the *gouty* contracted kidney as in (3), but have always made a single division of the contracting organ. We admit, however, some reason for such a separation as is made by the author. The distinction between this and the third stage of the inflammatory form lies in the quantity of interlobular connective tissue and the condition of the tubules. In the former, the contraction is mainly the result of absorption of the so-called exuded matter, much of which, however, still remains in the tubules, which are variously atrophied. In the latter, the diminution in size is due to a proliferation of the elements of the intertubular connective tissue, and subsequent contraction of the same. Dr. Stewart believes, also, that in the third stage of the inflammatory form the fibrous stroma is relatively more abundant than in health, but by no means to so great an extent as in what he terms the cirrhotic form.

With the trifling exceptions we have named, we have no fault to find with the book of Dr. Stewart. On the other hand, we know no work on the subject which is more valuable, and none which affords such pleasant reading. The style is clear, sufficiently concise, and even the reports of cases are attractive reading. We commend it most heartily. The illustrations, typography, and general appearance of the volume add to its value. J. T.

ART. XXIX.—*A Clinical Manual of the Diseases of the Ear.* By LAURENCE TURNBULL, M.D., Physician to the Department of Diseases of the Eye and Ear, of Howard Hospital, of Philadelphia; &c. With a coloured lithographic plate, and over one hundred illustrations on wood. 8vo. pp. 486. Philadelphia: J. B. Lippincott & Co., 1872.

THE plan of this work is comprehensive, and, besides the anatomy and pathology of the ear found in all the aural text-books, includes chapters on the "Physiology of Hearing," "Acoustics," and "Deaf-Mutism."

The last gives an interesting account of the different systems of teaching deaf mutes, and the principal institutions devoted to that object.

In the classification of the different forms of diseases of the ear, the author furnishes a table of six hundred cases from his own practice, in addition to a large number from other sources.

A good deal of space, perhaps more than is necessary, is devoted to the description and figuring of instruments, most of which are familiar to every practitioner. The forceps described in the list of illustrations as the "author's angular forceps," which, by the by, are not "angular," but curved, seem to be an improvement on the old form.

The book gives evidence of research; its bibliography is copious, and it presents a full summary of the subject of which it treats.

We must, however, dissent from the author's statement in the preface that "he has not simply recorded the views and opinions of others," as we have hardly been able to find throughout the volume an original observation or a new idea.

There is an unusual, probably unprecedented, profusion of quotation marks

upon its pages. In fact, it may be said to consist principally of matter that has been transferred *verbatim* from other works, and cannot, therefore, claim to be anything more than a compilation. As such, it will be found useful, particularly for convenience of reference, as the selections are numerous, and from the best authors. Indeed it might almost be called an aural encyclopædia.

The value of a medical work is by no means always in proportion to its originality, and the author has done service in condensing so much information collected from every available source.

The publishers have done their share of the work well, and the general appearance of the volume is very attractive. But the instances of awkward phraseology and careless proof-reading are unusually numerous.

Such expressions as "*Anatomical description of the ear and its functions*," and "*Frozen and gouty inflammation of the auricle*," glaring in large type in the running-title of pages, cannot fail to strike the most superficial reader; and there is scarcely a chapter that does not contain many passages that require revision.

G. C. H.

ART. XXX.—*Die "Exakten" Deutschen Ohrenärzte.* Von Dr. W. KRAMER, Geheimer Sanitätsrath. 8vo. pp. 40. Berlin, 1871.

The "Exact German Aurist." By Dr. KRAMER, Sanitary Privy Councillor.

THIS publication, as the author remarks, is to be received as a kind of appendix to his well-known "Treatise on the Nature and Treatment of the Diseases of the Ear," an English translation of which was published in Philadelphia, in 1838. It presents a kind of running commentary on some of the views advanced by the more prominent of the European aurists of modern times. The criticisms of Dr. K. enforce the necessity of a careful comparison of the lesions discovered after death in each portion of the auditory apparatus, with the symptoms which accompany during life the several forms of disease of the ear, as the only sure foundation for a correct and reliable pathology and diagnosis in each, and ultimately a rational and successful plan of treatment.

The work throughout is replete with interest and practical instruction. It would be a pleasant task for us to present a full analysis of its entire contents, could we do so with justice to the author and our readers, and without encroaching upon the limits of the departments of the Journal devoted to original contributions, and to a notice of the additions constantly being made, at home and abroad, to every department of medical science.

D. F. C.

ART. XXXI.—*Emergencies and how to treat them. The Etiology, Pathology, and Treatment of the Accidents, Diseases, and Cases of Poisoning, which demand prompt action. Designed for Students and Practitioners of Medicine.* By JOSEPH W. HOWE, M.D., Visiting Surgeon to Charity Hospital; Lecturer on Surgery in the Medical Department of the University of New York, etc. etc. Small 8vo. pp. 265. New York: D. Appleton & Co., 1871.

THE range of this book extends over almost all the emergencies which can occur in general practice, the object of the author being to furnish, in narrow

compass, a guide for the treatment of all the important exigencies included by our science. The measures advised by Dr. Howe are those recommended by standard authorities and such as his own experience and observation have found effectual, nevertheless, in some instances we feel obliged to differ from the views expressed.

Hemorrhage, general, special, and of the uterus, is the subject treated of in the first three chapters, and the directions given are concise and accurate, but do not require notice from us beyond drawing attention to them as such.

Chapter IV. discusses wounds of important organs, and includes those involving the throat, thorax, and abdomen, with the contained viscera. In it is also described a very rare operation, namely, ligation of the internal mammary artery, as well as the steps pursued in performing perineal section, and it contains short notices of gunshot wounds in general, and wounds of joints. In the next chapter wounds of arteries and veins are considered, and directions given for the ligation of special vessels. In speaking of the application of a ligature to the *arteria innominata*, the operation is said to be rarely successful, which expression hardly conveys a correct idea of the result to be anticipated from its performance, it having been invariably fatal, with one exception. Excellent advice is given—to tie all wounds of the palmar arch at the seat of injury—but no reference is made to the tediousness and difficulty of so doing, nor, indeed, is this point referred to in systematic works generally. We recollect very well the first time we had occasion to do that operation, occupying a long period in its performance, much to our own mortification, and being afterwards relieved to find that others of more mature experience had passed through similar trials. While discussing the cause of death in those cases where air has been admitted into the veins during an operation on the neck, Dr. Howe promulgates as his own the following theory: when the atmosphere, with a pressure of fifteen pounds to the square inch, is admitted into the cavities of the heart, which only possesses a propelling power of thirteen and a half pounds to the inch, the heart being overpowered, instantaneous paralysis ensues, and though the weight of the column of air may be immediately removed by closing the wound, there is no way to remove the admitted air rapidly enough for the heart to resume its action, and death ensues.

Chapter VI. contains an account of the character and treatment of dissecting wounds, hydrophobia, and the bites of snakes and insects. While enumerating the ways in which the first-named injuries may be produced, no mention is made of puncture by a needle, which, in our experience, we have found to be among the most certain methods of introducing poisonous matter into the system.

The extraction of foreign bodies forms the subject of the following chapter, laryngotomy, tracheotomy, and œsophagotomy being described in it. We regard it as a mistake to speak of these operations in similar terms and with equal brevity, for while the first two are measures evidently called for in emergency, and such as any well-educated physician should not hesitate to perform in the absence of a surgeon, œsophagotomy, on the other hand, is very rarely called for, is not generally done in haste, and involves great danger *per se*, as requiring for its performance considerable manual dexterity and very perfect anatomical knowledge. Dr. Sayre's bristle probang, for the removal of pins, bones, &c., from the gullet, is incorrectly spoken of as recently introduced, whereas it, or an instrument similar to it, has been known to us for many years. We are advised to remove insects from the ear by excluding the air with a plug of cotton moistened with vinegar; we have had no opportunity to test this plan, but should imagine it to be a much less effectual remedy than the old one of closing the spiracles of the intruder by filling the meatus with oil. The

general impression left upon our mind by a careful reading of this chapter is, that the subjects treated of in it are rather summarily dismissed.

Loss of consciousness, subdivided as coma and syncope, occupies two chapters. The causes included in the first division are enumerated to be, compression of the brain from extravasation of blood or depressed bone, embolism, uræmia, alcohol, hysteria, epilepsy, and concussion. Some general directions are given to aid the student in making a differential diagnosis, but on a subject which furnishes so ample a field for the exhibition of the niceties of diagnostic skill little can be done in the narrow limits our author allows himself. We must take exception to the advice given by Dr. Howe, to trephine in those cases where symptoms of compression are associated with a history of external violence but no evident lesion of the skull exists, as we think the adoption of such a course will often entail disappointment upon the operator, who will be quite as likely, if he finds extravasation at all, to find it associated with laceration of the brain, and effused into its substance, as to find a clot which can be wiped off the surface of the hemispheres. No mention is made under this head of that valuable adjuvant of the treatment of these cases—absolute diet. Syncope, as a cause of loss of consciousness, is considered as depending upon hemorrhage, thrombi in the pulmonary vein, anæmia, mental emotion, blows upon the epigastrium, and collapse.

Dr. Howe adheres to the term asphyxia, as most used, though less accurate than apnœa. The special causes of asphyxia considered by the author, are strangulation, compression of the chest-walls, the inhalation of poisonous gases and drowning; for each of which accidents the appropriate treatment is indicated, the inhalation of pure oxygen occupying a prominent place among the remedies proposed. The directions for the resuscitation of persons taken from the water are especially clear and simple.

Our author is more discursive than usual in Chapter XIII. and after referring to the history of sunstroke, as contained in the Old Testament, he presents the subject, as now known, with its appropriate treatment, in a succinct and forcible manner. Dyspnœa and œdema glottidis receive satisfactory notice in successive chapters; for the latter affection, when at all serious, either laryngotomy or tracheotomy is properly considered as indispensable for successful treatment. While narrating the long list of remedies which have acquired reputation in the treatment of asthmatic paroxysms, no mention is made of opium, the exhibition of which in full doses, in our own experience, has appeared worth all the rest.

The subject of convulsions occupies considerable space.

“Suspended Fœtal Animation” and “Complications of Labour” are the headings of Chapters XVII. and XVIII., the first of which appears to us to be a misnomer, for it is hardly possible to treat suspended animation in the fœtus before birth, while, after that event, it is rather hard to so style the new-born child. Chapter XIX. contains remarks upon retention of urine, dislocation of the neck, injuries from lightning, and colic. For the relief of the first affection the treatment advised inclines to be heroic, puncture of the bladder, which, in our observation, is so rarely necessary, being spoken of as an every-day resource; while the danger of attempting to reduce a dislocation of the neck is not referred to, but the operation is described in pretty much the same terms as would be appropriate in speaking of the reduction of any other luxated joint.

The five remaining chapters treat of poisons and their antidotes, but contain nothing requiring special notice from us, further than to say that the work seems well done, and the instructions given such as will meet with general endorsement.

Throughout the volume that too common fault, carelessness in writing prescriptions, is very manifest, nominative and genitive, Latin and English being mixed in sad confusion and in utter contempt of all the rules of grammar.

Several inaccuracies in the names of authors cited are also contained in the book. Many of the sentences are carelessly constructed, bearing the marks of hasty composition, and the style throughout, while forcible, is somewhat slipshod. With these exceptions the book is creditable to its author, yet we think Dr. Howe would do well either to enlarge the volume into a more complete treatise, or to cut out much of the theory it contains and reduce it to a mere handbook. For works of this latter class there always seems to be a steady demand, as they are very popular with many, but our individual feeling has always been one of distrust for all royal roads to learning, it appearing to us that prompt and efficient action in emergencies can only be looked for from those well instructed in the general principles upon which our art is based.

S. A.

ART. XXXII.—*Bromides: their Physiological Effects and Therapeutical Uses.*

By ROBERTS BARTHOLOW, A.M., M.D., Prof. of Materia Medica and Therapeutics in the Medical College of Ohio. Being the Dissertation to which the Fiske Fund Prize was awarded, June 9, 1869. 8vo. pp. 47. Providence: Sidney S. Rider and Brother, 1871.

THIS essay, to which the Fiske Fund Prize was awarded, bears evidence of diligent research and careful clinical observation. In it the author studies successively the (I.) Physiological Effects of the Bromides in general; (II.) Physiological Effects of the different Bromides compared; (III.) Therapeutical Effects of the Bromides; (IV.) Applications of the Bromides in the treatment of Disease; (V.) The "Alterant" Bromides.

The part which probably will interest the general reader most is that in which the physiological effects of the different bromides are compared, for, aside from the general interest the subject has to the practising physician, it is to the elucidation of this point that Dr. Bartholow's experiments and clinical observations have been principally directed. The conclusions at which he arrives in this chapter are as follows:—

"The bromides of potassium, ammonium, and sodium generally correspond in the results and mode of their action.

"They produce weakness, trembling, and defective co-ordination of muscular movements and finally complete paralysis (destruction of irritability of muscle and sensibility of motor nerves). Bromides of potassium and ammonium are more active in causing these results than the bromide of sodium.

"They depress the action of the heart and lower the animal temperature; but the bromide of sodium is the most, and the bromide of ammonium the least, powerful in this respect.

"Each diminishes the functions of the brain, producing somnolence; but this effect is more fully induced by bromide of sodium than by the bromide of potassium, and by the latter more than by the bromide of ammonium.

"As toxic agents, bromide of potassium takes the first place, bromide of ammonium the second, and bromide of sodium the third."

I. M. H.

ART. XXXIII.—*Internal Urethrotomy as a Cure for Urethral Stricture.* By C. H. MASTIN, M.D., Mobile. Written by request for the Medical Association of Alabama, Session of 1871. 8vo. pp. 34. Mobile, 1871.

AFTER an interesting historical sketch of the early applications of internal urethrotomy to the treatment of stricture, Dr. Mastin proceeds to describe the several modes of performing the operation now commonly employed, and gives representations of the various instruments devised for the purpose by the ingenuity of surgeons. The urethrotome which has proved most satisfactory in Dr. Mastin's hands is a combination of "the 'small probe-pointed silver catheter' of Sir Henry Thompson, with the triangular blade of Maisonneuve, guarded by a fixed shield." This, which he calls a "catheter urethrotome," is employed by passing the probe-pointed extremity into the bladder, while the shield rests against the anterior face of the stricture; "having satisfied ourselves that the point of the catheter is within the bladder, which will be proved by a drop of urine appearing after the withdrawal of the mandrin, and that it is not in a false passage, we have only to turn the stop screw, push on the blade, and the stricture is cut."

Dr. Mastin's success in internal urethrotomy appears to have been very great, for he has, he tells us, operated over seventy times, without once meeting with any trouble of consequence. J. A., JR.

ART. XXXIV.—*Annual Report of the Surgeon General, United States Army, 1871.*

FROM this report we glean the following interesting facts:—

"The monthly reports of sick and wounded received at this Office for the fiscal year terminating June 30, 1871, represent an annual average mean strength of 29,365 *white*, and 2608 *colored* troops.

"Among the *white* troops, the total number of cases of all kinds reported as taken on the sick list was 63,507, being at the rate of 2163 per 1000 of mean strength. (That is about two entries on sick report during the year for each man.) Of the whole number taken on sick report 54,710, or 1863 per 1000 of strength for disease alone, and 8797, or 300 per 1000 of strength were wounds, accidents, and injuries of all kinds.

"The average number constantly on sick report during the year was 1480, or 51 per 1000 of strength; of these 1190, or 41 per 1000 of strength were under treatment for disease, and 290 or 10 per 1000 of strength for wounds, accidents, and injuries.

"The total number of deaths reported was 519, or 17 per 1000 of mean strength. Of these 363, or 12 per 1000 of strength, died of disease, and 156, or 5 per 1000 of strength, of wounds, accidents, and injuries.

"The total mortality rate is greater than that for the previous year, the chief increase occurring in the proportion of deaths from disease. The proportion of deaths from all causes to cases treated was 1 death to 122 cases.

"1091 *white* soldiers are reported to have been discharged on 'Surgeon's Certificate of Disability,' being at the rate of 37 per 1000 of mean strength.

"The reports from the *colored* troops give the following figures, which do not include the white officers:—

"The total number of cases of all kinds reported was 3551, or 1362 per 1000 of strength. Of these 2964, or 1137 per 1000 of strength, were cases of disease, and 587, or 225 per 1000 of strength, were wounds, accidents, and injuries.

"The average number constantly on sick report was 104, or 40 per 1000, of whom 74, or 28 per 1000, were under treatment for disease, and 30, or 12 per 1000, for wounds, accidents and injuries.

"The number of deaths from all causes reported was 49, or 19 per 1000 of strength. Of these 28, or 11 per 1000 of strength, died of disease, and 21, or 8 per 1000 of strength, of wounds, accidents, and injuries. The proportion of deaths from all causes to cases treated was 1 to 72.

"The number of discharges on 'Surgeon's Certificate of Disability' was 71, being at the rate of 27 per 1000 of mean strength.

"There were entered on the registers the histories of 5210 surgical cases of the late war, making a total of 235,398 now recorded; also, additional information respecting 9661 cases already recorded, and prepared for revision abstracts of 8947 cases which were not placed on the permanent registers. The hospital record of 22,756 men was searched; 16,008 names were indexed. The Pension Medical Examiners' reports of the condition, at the latest dates, of mutilated men, were transcribed in 2564 instances. Histories of surgical cases were furnished to other departments of the Government in 65 instances.

"The Army Medical Museum continues to increase in the number and variety of specimens and its consequent usefulness. The number of specimens added during the year was 1516, a present total of 15,018.

"The number of visitors was over 15,000 during the year."

We are further told that the first part of the Medical and Surgical History of the War is near completion, and it is to be hoped that Congress will make an ample appropriation for the publication of the remaining parts. The publications which have been issued already from the Surgeon General's Department have proved to be most valuable contributions to the science of Surgery, and have redounded to the credit of the army medical staff, and been in the highest degree creditable to the country.

ART. XXXV.—*Complete Report of the Board of Health and Board of Consulting Physicians, as presented to the City Council, December 12th, 1871; to which is annexed Instructions for Controlling Smallpox Contagion, adopted by the Board of Health of Lowell, Mass.* 8vo. pp. 18.

From this very interesting report we select a few facts and admissions, inasmuch as they furnish indisputable proof of the value of vaccination, when once the human system is effectually brought under its influence, as a certain and permanent protection from the contagion of smallpox, as well as of the necessity of revaccination to insure success and as a test to determine whether an abiding influence has been secured.

"Our experience," say the Board of Consulting Physicians, "in dealing with the present epidemic, compels us to place *isolation* before vaccination. The latter has not seemed to afford that protection which has usually been ascribed to it." At particular stages of the epidemic, vaccination, the report remarks, did not arrest the progress of the disease as was expected. In individual cases it has not prevented those *apparently* well vaccinated from having a violent, and, in several instances, a fatal attack of smallpox. A careful examination of quite a number of very grave cases at the hospitals distinctly showed marked cicatrices—some large and well pitted—the result, as the patients said, of *inoculation for smallpox* itself, or of vaccination with the virus of cow-pox. Still there were, it is admitted, other patients in whom the disease was much modified—rendered lighter in form or shorter in duration—by the

effects of vaccination. There were many instances, also, of individuals—including several infants—subjected to the greatest exposure, but who had recently been successfully vaccinated, remaining perfectly protected. The most striking proof of the protective power of vaccination was found among the employés of the mill corporations. Under the direction of the agents of these corporations, a more systematic and thorough course of vaccination has been pursued among the operatives and others connected with the mills, than among the other inhabitants of the city of Lowell. The rule has also always been to remove at once every case of smallpox or varioloid to the corporation hospital as soon as discovered. From the commencement of the epidemic in February, 1871, we are told that only *forty-nine* patients had been so sent from the mills and their boarding-houses, and in no instance have other parties exposed at the time, taken the disease. Twenty of the forty-nine were females, and only two died. It is true, however, that some of the operatives not residing in the corporation boarding-houses had been taken to the City Hospital, and others, prior to September 25th, were treated at their own houses, but these were few in number. As the persons connected in some way with the mills comprise one-third or more of the population of the city, the proportionate number sick with smallpox or varioloid from this class has been, hence, relatively, very small.

The good results derived from the uniform and prompt removal from the mill corporations of all cases of smallpox and varioloid, of course speak in favour of isolation as a prophylactic. Another striking fact, however, in favour of the protective power of vaccination under exposure, is deducible from the fact that very few school-children contracted the smallpox; the rule for admission into the public schools requiring evidence of successful vaccination having been always rigidly enforced. While the Board of Physicians were constrained to place *isolation* as the more successful agency in arresting the spread of the epidemic, they would by no means be supposed to undervalue the importance of vaccination, "*when properly performed.*" Of two things the members of the Board declare themselves more fully convinced than ever, namely: 1st. Of the frequent imperfection of vaccination, either in the manner of its performance, or of some defect in the virus employed; and 2d. Of the "*absolute necessity of revaccination.*" The latter is indispensable, whether we admit that the protective efficacy of the vaccine prophylaxis gradually diminishes with the normal changes that take place in the human body, as it advances in age (and therefore revaccination at proper intervals becomes necessary to test its continuance); or that, often, the first or even subsequent vaccinations, may not have produced a complete prophylaxis, and therefore, the operation should be repeated again and again, until it ceases to produce any effect, "when," the Board admits, "its protective power will *continue for life.*"

D. F. C.

ART. XXXVI.—*Lessons on Population, suggested by Grecian and Roman History.* By NATHAN ALLEN, M.D., Lowell, Mass. 8vo. pp. 16. Boston, 1871.

In this well-written and highly-suggestive pamphlet, Dr. Allen has examined the lessons on population, based upon facts deducible from the history of the downfall of ancient Greece and Rome. The substance of the essay appeared originally in the *Congregational Quarterly* for October, 1871. Dr. Allen

shows, with great clearness, positive evidence in support of his views, advanced in preceding publications, in respect to population, namely, that when this is dependent mainly upon natural human increase, it must necessarily become diminished by the prevalence of causes having a tendency to render prominent in a people a morbid excess of the nervous temperament. When the great mass of any community is seeking after an extravagantly high standard of self-comfort as their "supreme good," with all the energy, perseverance, and ingenuity they can command, everything standing in the way of its attainment must and will be sacrificed, even including marriage and parental relationship, if these be thought in any degree to conflict with it.

The lessons, based upon the teachings of Grecian and Roman history, Dr. A. would apply to the older settlements of our own country upon its Atlantic border. "As a people," he remarks, "we have set up a high standard of comfort—extravagant, and too expensive; it has too many wants, and requires such an amount of physical stamina and brain-power, as to result in premature exhaustion. This standard is based too much on mere wealth and the selfish nature of man; it is not calculated to develop harmoniously, or in the most healthy manner, all parts of the human body; nor to aid as it should in developing the moral and religious character of man, in accordance with the revealed will of God. The results of such a type of organization were determined, in the case of Greece and Rome, near two thousand years ago, the former flourishing some six hundred years, and the latter five hundred. It is now two hundred and fifty years since the first settlement of New England, and as a people, we are already reaching a crisis, a culminating point in history, where it is becoming a question whether there is, from year to year, an actual increase or not of native population. And if a decline once commence, the decrease may be rapid. We cannot well deceive ourselves if we would, for there are agents or causes working gradually and quietly, which seriously threaten the best interests of our people."

D. F. C.

ART. XXXVII.—*A Practical Treatise on the Diseases of Infancy and Childhood.* By THOMAS HAWKES TANNER, M.D., F.L.S., etc. *Third American Edition, from the Last London Edition, Revised and Enlarged,* by ALFRED MEADOWS, M.D., London, Member of the Royal College of Physicians, etc. etc. 8vo. pp. 560. Philadelphia: Lindsay & Blakiston, 1871.

DR. TANNER being, from the press of other engagements, rendered unable to superintend the publication of the second edition of his treatise, entrusted the task to his friend, Dr. Meadows, by whom it has been most successfully accomplished. By working out the author's design and intention, he has rendered the work, in the edition before us, an easy and reliable book of reference for the busy practitioner. Dr. Meadows has seen fit to entirely change the general plan of the treatise. He has divided it into four parts. The *first* treats of the physiology and pathology of childhood, including the anatomical peculiarities of childhood, with its hygiene, the process of dentition, etc. The *second* part treats of general diseases, including all the varieties of fever, continued and eruptive, and the several diathetic affections—scrofula, tuberculosis, rickets, and syphilis. The *third* part includes a consideration of the special diseases of children, arranged in physiological order, viz., those of the nervous,

respiratory, circulatory, digestive, and urinary systems respectively; also, diseases of the skin, eye, and ear. In the *fourth* part are discussed the more common accidents, injuries, malformations, and deformities—congenital and acquired—of childhood, including those connected with birth. The *appendix* of formulæ has been enlarged and rearranged. The editor calls especial attention to the views advocated by him in regard to diathesis and its importance in the therapeutics of infancy and childhood. Long experience and careful observation have taught him that herein will be found the key to the successful treatment of the diseases of early life.

D. F. C.

ART. XXXVIII.—*The Management of Infancy, Physiological and Moral. Intended Chiefly for the Use of Parents.* By ANDREW COMBE, M.D. *Revised and Edited by* SIR JAMES CLARK, BART., K.C.B., M.D., F.R.S., Physician-ordinary to the Queen. "First American from the tenth London Edition. 12mo. pp. 302. New York: Appleton & Co., 1871.

OF the character and nature of the work of Dr. Combe, nothing need be said, since it is too widely known and too highly appreciated to require any comment at this late date. By the editor, the order of some of the chapters has been altered, with the view of bringing the subjects treated of more consecutively before the reader. Some portions, especially in the earlier chapters, have been omitted, as less necessary now than during the author's lifetime. Some additional information has been given, on the causes and extent of infant mortality, chiefly taken from recent reports of the Registrar-General, while an appendix has been added, containing some useful matter not exactly fitted for the body of the work.

D. F. C.

ART. XXXIX.—*Essentials of the Principles and Practice of Medicine. A Handbook for Students and Practitioners.* By HENRY HARTSHORNE, A.M., M.D., Professor of Hygiene in the University of Pennsylvania, etc. etc. Third Edition, Thoroughly Revised. 12mo. pp. 487. Philadelphia: H. C. Lea, 1871.

WE are pleased to greet a new edition of this very able handbook of pathology and therapeutics. It is one of the best of its class with which we are acquainted, forming a useful and safe guide to the advanced student, and a valuable "book of remembrance" to the young practitioner.

The present edition bears evidence to the "great pains that have been taken by the author in its preparation, to supply omissions, and to add whatever has seemed to be most positive and important in the recent advances of medical science." Such additions occur at the greatest length in connection with the topics of tuberculosis, relapsing fever, and therapeutic uses of carbolic acid and hydrate of chloral.

D. F. C.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *On the Physical Principles by which the Escape of the White Corpuscles of the Blood through the Capillaries is effected.*—The remarkable corroboration that the statements of Waller and Cohnheim respecting the passage of the white corpuscles of the blood through the walls of the capillaries have received by physiologists generally, and the important bearing these observations have upon the question of the formation of pus and the fibrinous exudation of inflammation, confer special interest on all experiments and investigations tending to elucidate the physical principles by which the escape of these corpuscles is effected. At first sight nothing could well be conceived more improbable than that the formed or morphological elements of a fluid contained in a system of elastic tubes should be able to make their way out, whilst the limpid fluid itself should be retained. Not only is it difficult to imagine by what agency the first tendency to pierce the wall is brought about in the corpuscles in the absence of any visible holes in the membrane, but it is still more difficult to explain why the rest of the fluid does not pursue the same path. It is clear that it cannot be exclusively attributed to variations in the pressure of the fluid against the walls of the vessels caused by the action of the heart; for, as this is exerted upon the fluid as a whole, it is inconceivable that it should cause the extrusion of certain particles alone, without the operation of some other force.

An inquiry into the nature of this force has lately been undertaken by Dr. Richard Norris, of Birmingham, who has published two valuable papers upon it: one of which appears in the *Proceedings of the Royal Society*, the other in the *Transactions of the St. Andrews Medical Graduates' Association*. Dr. Norris points out that all the membranes which enter into the animal body may, from a physical point of view, be divided into two orders: the very fine, structureless, homogeneous films, which must be regarded as simple *cohesion membranes*, in contradistinction to the second order of coarse membranes, to which certain mechanical arrangements—as interlacing fibres—are superadded, which have the effect of increasing the strength. Films of collodion, gelatine, India-rubber, and soap may be regarded as examples of the first class of membranes; and these are susceptible of two states—the fixed or rigid condition, and the contractile or elastic state, dependent upon the presence of the principle of “flow,” which principle may be operative in every shade and degree, from perfect liquidity to absolute rigidity. Dr. Norris takes the soap film as the best illustration of the class of homogeneous cohesion films possessing in the greatest perfection this principle of “flow,” and as best exhibiting pheno-

mena which he has generalized under the term "progressive cohesive attraction." He describes the production of a soap-bubble, and points out the capability it possesses, under the influence of progressive adhesion, of perfecting any absence of continuity that may exist in its structure; so that after its complete detachment it may be perforated by any wetted body, which may again be withdrawn without the bursting of the sphere. Again, he shows that if a soap-bubble be allowed to impinge on a smooth rigid surface, it becomes so drawn down to the plate as to assume a hemispherical form; but if for the rigid surface a delicate plastic film be substituted—such as may be taken up by a ring from a solution of soap—the soap-sphere immediately *penetrates* the film, and arranges itself so that half is on one side and half on the other. If pressure be now applied to one side, the bubble can be caused to protrude still further through the film, and it may even ultimately be made to pass through the film without any rupture occurring in either.

Without entering further into Dr. Norris's ingenious experiments, it is obvious that we have here a very close similarity to the phenomena accompanying the extrusion of the white corpuscles. In both cases the conditions essential for a rigid or a plastic body to pass through a colloid film are present; and these he has shown to be—firstly, an intimate power of cohesion, either mediately or immediately, between the film and the body; secondly, a certain amount of pressure from within; thirdly, power in the substance of the film to cohere to the surface of the body during its passage; and, lastly, cohesive plasticity of the particles of the material of which the film is itself composed, so that the breach in it may again become united as it descends upon the opposite surface of the body which is being extruded. It may be asked, however, why the white corpuscles are not constantly escaping in large numbers from the vessels; to which Dr. Norris replies, that as it is only under certain conditions that the soap-spheres attract each other—namely, when free liquid is cohering to their surfaces—so with the corpuscles, which do not unite with each other or with the capillary wall unless their normal osmotic relations are disturbed, the exosmotic current setting in excessively causing their surface to become coated with previously-contained substance, when they become instantly attractive of the capillary wall.—*Lancet*, Jan. 6, 1872.

2. *Case of Doubtful Sex*.—Dr. FLUME describes, in the *Nassauisches Aerztl. Corresp. Blt.*, No. 8, 1871, the case of an individual that, from the decided masculine type of the head and of the facial expression, the deep tone of the voice, the full, strong beard, the small, hairy breast, with entire absence of protuberant mammae, and especially from the appearance of the external genitalia, would be at once taken for a male. A growth of hair extended from the pit of the stomach to the pubes along the median line; from the pubes, a deep sulcus descended, bounded on each side by a firm projection, covered with hair, resembling the labia pudendi of the female. From beneath the anterior commissure formed by these lateral protuberances there projected a penis, one inch in length, resembling in shape and bulk that of a full-grown man; its glans did not present any opening at its lower angle, the orifice of the urethra being at the root of the penis. The individual had never menstruated. Death occurred from an attack of pleurisy. An examination of the body showed the presence of a uterus of the usual size and with a cavity the same as of the normal organ. The tubes and ovaries were also present. The pelvis, in its conformation and expansion was that peculiar to the female. The presence or absence of this formation of pelvis is pointed to by Dr. F. as of the greatest importance in determining the actual sex in all doubtful cases, while the case shows the unreliability of the test referred to by Casper, the presence in the male of the strip of hair along the linea alba.—*Centralblatt f. d. Med. Wissenschaften*, Dec. 9, 1871.

D. F. C.

3. *On the Nutrition of Muscular and Pulmonary Tissues in Health and in Consumption, with Remarks on the Colloid Condition of Matter*.—This is the title of a very interesting paper by Dr. WILLIAM MARCET, published in the

Edinburgh Medical Journal for February last. The following are the conclusions given by the author as the result of his elaborate researches:—

1. Phosphoric acid and potash may be prepared artificially in the colloid state, by dialyzing a mixture of chloride of potassium and phosphate of soda.

2. Wheaten flour, potato, and rice are found to contain, respectively, nearly the same proportions of colloid phosphoric acid and colloid potash, compared to the total quantities of these substances present; and these same proportions of phosphoric acid and potash are occasionally found to exist also in blood.

3. Plants form colloid material, although they may find some ready prepared, or in process of preparation in the soil.

4. Muscular tissue in health is formed of three classes of substances: (1.) Those which constitute the tissue proper; (2.) Those destined to become transformed into the tissue proper, and make up for the waste; (3.) Those which are in process of elimination—the first being solid and colloid, the second fluid and colloid, and the third soluble and crystalloid; the phosphoric acid and potash in the third class of substances occur precisely in the proportions required to form crystalloid pyrophosphate of potash. This is invariably true for the flesh of animals highest in the scale; but in the salmon the proportions do not quite agree with those of the above compound, which appears to show that the material in progress of elimination is somewhat less crystalloid in fishes than in the flesh of the higher animals, and this would account for an accumulation of effete matter in the salmon.

5. Blood-corpuscles appear to take up albumen, phosphoric acid, and potash in the blood, and yield them in the proper proportions to muscular tissue for its nutrition; but this subject requires further investigation.

6. The nutrition of pulmonary tissue in health differs from that of muscular tissue, inasmuch as the proportion of phosphoric acid to the albumen in the tissue proper, and consequently also in the nutritive material, is much higher in the lungs than in flesh; and that of the potash in the effete material is much higher, proportionally to the phosphoric acid, in pulmonary than in muscular tissue. This excess of potash is apparently eliminated under the form of carbonate.

7. The nature of the chemical changes which take place within muscles in consumption is the same as in health, but these changes are lessened in degree, the amount of nutritive material supplied being diminished. Moreover there appears to be in muscular tissue in phthisis a beginning of that separation of water from the solids which, under other circumstances, only occurs some time after death.

8. Muscular tissue in consumption contains more soda and chlorine than in health; in the mean proportion of 0.117 of chlorine and 0.239 of soda in health, to 0.385 of chlorine and 0.446 of soda in consumption, for 200 grammes of flesh; showing apparently that the physical power or diffusion which had been kept in abeyance in health begins to act in phthisis.

9. The pulmonary tissue in phthisis when consolidated and softening, still undergoes a process of nutrition; but this phenomenon is different from that which occurs in health, and becomes remarkably like the nutrition of muscular tissue.

10. The pulpy state of tubercular lungs in the softening condition appears due to an altered relation between the water and solids, and not to a fatty degeneration. The diseased organs, moreover, contain less colloid and more effete or crystalloid material than in health, these several phenomena showing, as in the case of muscles, a commencement of physical change.

11. Finally, death from consumption, when not due to asphyxia from deficient action of the organs of respiration, is apparently owing to the physical power of matter overcoming the phenomena of life, the nature of which is still a mystery, physical changes actually commencing before life is extinct.

MATERIA MEDICA AND GENERAL THERAPEUTICS
AND PHARMACY.

4. *The Physiological Action of Digitalis on the Depressor Centres of Reflex Action of the Frog, along with Experiments on the Influence of the Circulation on this Organ.* By A. WEIL, M.D.—Certain phenomena have for some time been taken to indicate that in the brain there exist centres which exercise a depressing influence on reflex action. These phenomena are the increase of reflex action in beheaded animals, and also the power which we possess of voluntarily preventing reflex action. With a view to find the seat of these depressor centres, Setschenow conducted certain experiments, the result of which was to show that they are situated in the optic lobes and corpora quadrigemina. The present paper has reference to the action of digitalis on these centres, and also the influence which various changes in the circulation produce on them. The experiments are very elaborate, and are marked by great ingenuity, and the general results deduced may be stated as follows: digitalis reduces the power of reflex action in frogs which had been specially prepared to exhibit reflex action—the degree of this action being tested by the number of seconds during which the leg of such a frog was retained in an acid solution. A similar reduction of the power of reflex action is produced by depriving the animal of blood, also by stopping the heart's action, and to a less degree by a retardation of the heart's action. It was also produced by cutting out the lungs, by placing the animal for some time in an atmosphere of hydrogen, or by poisoning with HS. In these two classes of experiments the depression of reflex action is probably due to the absence of O in the blood, the depression centres being irritated by blood deprived of oxygen. The question then comes, whether the depressing action of digitalis is due to the action of this substance on the circulation, the diminution of the heart's action being the actual cause of the reduction of the reflex action. The experiments conducted with this view seem to show that while the depression is partly due to this latter cause, yet that digitalis has also a direct action on the depressor centres, this being shown by the fact that the depression is much greater than is produced by an equivalent simple diminution of the heart's action, and also that the depression sometimes precedes the retardation of the heart's action. While digitalis acts on the depressor centres, it appears also, after a certain time, to act directly on the reflex centres on the spinal cord. When small doses had been given, and a short time had elapsed, reflex action was recovered, on the removal of the depressor centres by decapitation of the frog, but with larger doses, and after a longer time, recovery did not take place, so that the digitalis had acted on the spinal cord.—*Glasgow Med. Journ.*, Feb. 1872, from *Reichert and Du Bois-Reymond's Archiv*, 1871.

5. *Physiological and Therapeutical Actions of Quinia.*—Our knowledge of the physiological and therapeutical actions of this invaluable alkaloid has been recently much extended by the labours of Binz, Ranke, Kerner, Zuntz, Scharrenbroich, and Schulte. We propose to lay before our readers a *résumé* of the chief results obtained.

Binz finds that quinia has the power of arresting the processes of putrefaction and fermentation in a high degree, and that it is an active poison for all low organisms, animal and vegetable. According to Cohnheim's views, pus, being mainly a collection of white blood-globules, which have passed through the walls of the vessels—further, quinia having the power of arresting the motions of the white corpuscles, and hence preventing their exit from the vessels—the alkaloid arrests, or at all events diminishes, the formation of pus during the course of inflammation. Moreover, it destroys the ozonizing power of certain substances; and as the red corpuscles have this power, quinia in the blood probably diminishes oxidation of tissue, and lessens the production of heat. Ranke and Kerner, indeed, have found that quinia in large doses diminishes tissue changes, as is shown by the smaller quantities of urea and uric

acid excreted; and there are many observations to show that in fevers it produces a decrement in temperature. Ranke and Kerner's experiments do not show, however, how far the lessening of tissue-waste is due to the direct action of quinia on oxidation, and how far to the indirect action of the alkaloid through the nervous system. Two methods have been employed for ascertaining the direct influence of quinia on oxidation. Harley added quinia to the blood, and found that this, when so treated, took up less oxygen and gave off less carbonic acid than blood which had not been so treated. This method is inconvenient of application, and liable to error. Zuntz employed the changes in the alkalinity of the blood for arriving at the same results. Schulte has extended these researches. If fresh blood be drawn, a development of acid begins in it, and continues, at first rapidly, then more slowly, till putrefaction sets in. Of course this acidification depends on oxidations; and the diminished alkalinity of the blood, thereby produced, furnishes a test of the rapidity with which oxidation proceeds. Schulte has confirmed the observation first made by Zuntz and Scharrenbroich, that quinia and berberine lessen the production of acid. Harley's observation is thus confirmed. Cinchonia produces similar results to quinia, though in a very inferior degree. Picrate of sodium is nearly as powerful as quinia. Zuntz found, as Ranke and Kerner had previously done, that quinia in ten-grain doses lessens the daily excretion of urea by one-third or more. Unruh has found the same to occur when quinia is administered in fevers; but his observations are open to objection. Binz's experiments are curious, and show, that, when putrefying liquids are injected into the circulation, the temperature of the body rises; but, if the fluids be previously mixed with quinia, whereby the putrefactive processes are arrested or destroyed, the rise in temperature is either entirely arrested or considerably diminished.

We think that these experiments have an important bearing on practice, and that they are in accordance with the teachings of clinical observation. It has been too much the fashion to assume that the therapeutical actions of quinia are entirely different from its effects when administered in health. We apprehend that the true method of commencing the study of the actions of medicines is first to ascertain their effects in health; then to observe their results in disease.

Dr. Grace Calvert has also recently announced the discovery of the power of quinia in preventing the development of fungi. He appears, however, to have been unaware of Binz's previous publication of the fact.—*Med. Times and Gazette*, Feb. 3, 1872.

6. *Therapeutic Uses of Chloral*.—Dr. OSCAR LIEBREICH, in the third edition of his treatise on hydrate of chloral, gives a general view of the classes of disease in which observation has allowed a general opinion to be formed as to the merits of the remedy. Numerous experiments in all countries have established the fact that chloral has the property of producing sleep in all pathological states where it is desirable to obtain this; and it does this without giving rise to any mischievous results. Some special peculiarities with regard to its action have, however, been observed. In a case of gout, for instance, a dose of hydrate of chloral produced excitement; but, when the patient had been treated with carbonate of soda for a week, the same dose acted as a hypnotic. This, according to Dr. Liebreich, was due to the circumstance that, at first, the formation of urate of soda deprived the blood of its normal amount of alkali, and thus prevented the transformation of the chloral into chloroform. On the other hand, and in accordance also with the theory of the transformation of chloral, it has been noticed that in typhus, where there is an excess of alkali in the blood, small doses of chloral readily produced sleep, while larger (even moderate) quantities gave rise to symptoms of poisoning. With regard to the use of chloral in operative surgery, the results of Dr. Liebreich's experiments have led him to expect with certainty that the drug may be used in such a way as to produce sufficient anæsthesia for even severe operations on the human subject. His observations of animals have shown him that there is a marked difference between a poisonous dose and the quantity sufficient to produce complete anæsthesia; and this meets the objection to chloral as compared with chloro-

form, that it is not introduced gradually into the system, but at once. Although experiments have shown that small doses of chloral have little influence on the circulation, Dr. Liebreich advises caution as to its use in heart-disease. In trismus and tetanus larger doses are indicated, as small quantities do not produce the necessary action on the spinal cord. Hydrate of chloral has been found to act beneficially in a number of cases of puerperal convulsions; and Dr. Liebreich is disposed to explain this by accepting Frerichs' theory, that the convulsive attacks are connected with the transformations of urea into urate of ammonia, and by supposing that, besides the production of chloroform, there is a formation of hydrochloric acid which neutralizes the ammonia. Among other diseases in which there has been a general agreement of opinion as to the beneficial effects of hydrate of chloral, Dr. Liebreich mentions senile insomnia, delirium tremens, nervous asthma, chorea, dental convulsions in children, seasickness, etc.—*Brit. Med. Journal*, March 2, 1872.

7. *The Calomel Vapour Bath*.—Mr. HENRY LEE made a communication to the Medical Society of London (Jan. 29, 1872) on some cautions to be observed in the use of calomel vapour baths. He had introduced calomel baths to the notice of the profession; and before doing so he had laboured to find out the cause of failure of the cinnabar and gray oxide of mercury. Cinnabar was decomposed by heat, and gave off sulphurous acid, which irritated the lungs. The gray oxide was decomposed, and, absorbing oxygen, became the binoxide, and acted more powerfully. These remedies acted sometimes with small, sometimes with great, effect. Calomel, when used with water as he recommended, was, he thought, perfect; the skin was acted upon and the lungs were not irritated. The caution given to use water with the bath had been neglected in some quarters. During the fumigation with calomel, hydrochloric acid was given off, which was very irritating to the lungs; but no bad results followed if water were used. A young woman in good health and well nourished was suffering from a syphilitic ulcer of the throat. Twenty grains of calomel were volatilized in a teapot (without water) and inhaled. The skin suddenly became cold and livid, the lips blue, and the pulse small. The woman died, and at the necropsy the internal organs were found healthy, but the lungs were emphysematous, and there was effusion into them. A man inhaled thirty grains of calomel from a teapot for four nights for the cure of a hoarseness which had lasted two years, and had resisted a great variety of treatment. The hoarseness was cured without salivation, but the man had suffered ever since from a cough and pain in the chest. The lungs were not diseased, and no tubercle was present.—The President asked Mr. Lee if he had met with any untoward results after his treatment with the bath? What recommendation did he give to those about to use it?—Mr. Lee had not seen bad results except from pre-existing disease—old cases of mercurialization or disease of the bones. He did not salivate, but produced a slight tenderness of the gums. He used an apparatus of tin, with a tray for the calomel and a gutter for the water, a spirit-lamp to burn an ounce of spirit, half a drachm of calomel, a stool or chair, and a cloak. The calomel was sublimed and deposited on the skin. A little of the vapour was inhaled from time to time. The patient was ordered to sleep in the cloak. In four or five nights the gums were affected. In the case of one patient, two successive baths produced tender gums. Substances likely to produce diarrhoea were to be avoided.—*British Medical Journal*, February 24, 1872.

8. *Crystallized Digitaline*.—M. BUIGNET, in a report to the French Academy of Medicine, made January 23, on the essays sent for competition for the Orfila Prize, announces that the successful candidate (whose name is withheld until the time for the official declaration arrives) has made a discovery likely to be of very great utility in therapeutics and physiology. It is the production of crystallized "digitaline" in a state of absolute purity. The product has been submitted to a rigorous examination by the Prize Committee, and the superiority of the procedure adopted for the isolation of this active principle is admitted without hesitation. Splendid crystals resembling those of sulphate of quinia, and furnishing a bright emerald green when treated by hydrochloric

acid, were exhibited at the last meeting of the Academy, and greatly admired. The chemical perfection of the product has been confirmed by its physiological and therapeutical effects in the hands of MM. Vulpian and Marrotte. Its promptitude and intensity of action are far greater than is the case with the digitaline of Homolle and Quévenne—three milligrammes administered in twenty-four hours producing saturation and intolerance, and one milligramme daily being ill-supported by most patients, so that more than half this quantity cannot usually be given. It is evidently an agent of tremendous power, which will require great caution in its employment, and may prove a fearful weapon in the hands of the poisoner.—*Med. Times and Gaz.*, Feb. 3, 1872.

9. *Bichloride of Methylene*.—Mr. F. SEARLE adds his testimony in favour of this anæsthetic. In 1870 he administered it to more than 100 cases in the West of England Eye Infirmary, and has since used it in private practice. He has given it in all ages, from 6 months to 70 years, without a single cause for alarm, vomiting even being exceptional. It is important not to allow the patient to escape from its first influence, otherwise excitement ensues. (*Lancet*, May 27.) In Padua, bichloride of methylene has been employed for three years in the surgical clinic to the exclusion of ether and chloroform, being sent over from London by Messrs. Robin. Out of 108 operations performed under its influence, Dr. Rossi states that 52 patients slept tranquilly without any muscular agitation within from 1 to 5 minutes; 32 experienced slight excitement and became insensible in 8 or 10 minutes. Four only were violently agitated, and sleep was not induced from 15 to 20 minutes; 20 remained completely free from its influence even after 50 minutes of inhalation. Vomiting occurred in 8 instances. No other accident declared itself, and the liquid excited no cough, but slight lachrymation. The pulse and respiration were increased in frequency from the first, but soon returned to the normal state, and even fell below it. The face underwent no change of colour. (*Journ. de Pharm. et de Chim.*, Sept.) These results correspond in many particulars with those previously attained in England by Mr. Miall and Mr. Gaine, and this anæsthetic seems well worthy of future trial.

To the three deaths already recorded as happening under its use must now be added another from the Radcliffe Infirmary, Oxford. Bichloride of methylene was administered on a flannel bag to a woman, aged forty-four, who was about to undergo an operation for cancer of the breast. After two or three convulsive gasps the patient died, though the quantity administered was small.—*Dub. Journ. Med. Sci.*, Feb. 1872.

10. *Glycerine as a Solvent for Substances used in Subcutaneous Injection*.—At a late meeting of the K. K. Gesellschaft der Aerzte in Vienna, Dr. MORITZ ROSENTHAL, one of the *dozenten* in the Allgemeine Krankenhaus, advocated the use of glycerine as a medium for the solution of the various substances used for subcutaneous injection, and also exhibited specimens of such solutions. It is of the highest importance that the glycerine used be chemically pure, and free from all traces of fatty acids. By gradual elevation of temperature, the glycerine can be made to take up into solution a large number of certain alkaloïds—*e. g.*, chinin, morphin, curan, and also opium extract, and to retain them dissolved for, at all events, a year (this being the duration of the experiment) in a complete and clear solution. Certain other substances—*e. g.*, thein, caffen, and preparations of iron, are, on the cooling of the solution, reprecipitated.

Of disulphate of chinin, twenty grains are soluble in one drachm of glycerine, this being in the proportion of 1 to 3. The same amount of the solvent will take up ten grains of muriate of morphia or of opium extract. Corrosive sublimate, of which five to six grains are soluble in one drachm of glycerine, must be diluted with water. One drachm of the solvent will take up only one grain of curare. The glycerine solutions of chinin, subcutaneously applied, were found of especial benefit in intermittents.

All of these solutions were stated to remain during the summer months perfectly pure and free from all traces of vegetable moulds.

In cases where the patient is very sensitive, these solutions can be diluted

with water, and are stated to be especially adapted for injections in the region of the back, of the sides of the chest, and of the nates.—*The Lancet*, Jan. 27, 1872.

11. *Effects of Subcutaneous Injection of Morphia*.—HAUSMANN (*Berichte des Naturwis.-Medic. Vereines*) has observed—as Nussbaum and Mühe had previously done—that the subcutaneous injection of morphia is sometimes suddenly followed by peculiar effects. These consist in pain and redness of the face, contractions of the muscles of the lower jaw, a hammering, frequent pulse (130), dyspnoea, and clonic spasms of the limbs. These symptoms last five minutes. The spasms first cease; then the pulse becomes quiet, and at last violent sweating breaks out. Hausmann is disposed to accept the explanation given by Nussbaum, that in such cases the morphia directly enters the veins. The production of the phenomena does not appear to depend on the quantity of morphia injected.—*Brit. Med. Journal*, March 2, 1872.

12. *Eucalyptus Globulus as an Antiperiodic*.—At a recent meeting of the Königsberg Society for Scientific Medicine, Herr Bohn said that his observations had proved the antipyretic action of eucalyptus globulus in hectic and intermittent fever. In one case of the former it was more efficacious than quinia. In a case of masked intermittent, assuming the form of cerebral disorder, in a child seven years old, he had arrested the disease in four hours by giving fifteen grammes of the tincture in drachm doses. He expressed the opinion that the tincture would be found useful in puerperal fever of an intermittent type.—*Brit. Med. Journal*, March 2, 1872, from *Berliner Klin. Wochenschr.*, 26th Feb. 1872.

13. *Chronic Chloroform Narcosis*.—In an interesting paper (*Practitioner*, Dec. 1871), Dr. ANSTIE states that the constant use of large doses of chloroform, for the purpose of relieving pain, may bring about a degraded condition of the nervous centres analogous to that induced by alcoholic excess. Alcohol and chloroform are strictly analogous with each other, though different in all the phases of their action. Sulphuric ether is similarly analogous to both. They are all three pure *stimulants* (*i. e.* restorers of calm natural function) in small doses, *inebriants* when given in larger quantities, and *anæsthetic narcotics* in full doses. The most important peculiarity of chloroform, as compared with alcohol especially, is the fact that its great insolubility in the serum of the blood causes it to escape entirely, or almost entirely, from the lungs within a very short time (one hour?) after its administration, and without undergoing decomposition in the body. As a result of this latter fact, chloroform, however dangerous at the moment of surgical narcotization, is exceedingly free from tendencies to produce after-mischief, since the organism is speedily rid of its presence.

Unfortunately, the knowledge of this latter familiar fact has led to unwarrantable inferences as to the effects of a kind of chloroform administration which is radically different from the ordinary induction of surgical anæsthesia.

Dr. Anstie denounces the practice of patients keeping a chloroform bottle at hand and using two, three, or four ounces of chloroform many times a day, according to the promptings of pain or other nervous distress. Independent of the sudden and fatal chloroform narcosis which has several times resulted, this practice can lead to chronic mischief similar to that produced by alcoholic excess. In some cases Dr. A. has observed a state of peculiar maniacal excitement, which really deserved the name of maniacal. Another consequence not unfrequently observed, of the profuse and continued employment of chloroform, is the disposition to recurrent vomiting. The patient sometimes begins by losing all appetite; but this is not always the case. Most commonly the tendency to sickness shows itself in a disposition to retch, or actually vomit, after awakening from a heavy semi-comatose sleep: but the vomiting sometimes becomes frequent as the case proceeds, and greatly prostrates the strength. Entire intermission of the use of chloroform then becomes an absolute necessity, and the sickness usually subsides quickly.

Another phenomenon, which strikingly recalls the condition of chronic alcoholic patients, is an intense insomnia which is occasionally observed as a result of long-continued and copious use of chloroform.

The worst result that Dr. A. has seen from prolonged abuse of chloroform has been in cases of "spinal irritation" of the truly hysteric type. In this class of patients, especially in women near the menopause, he has known it to produce violent erotic excitement, to which no doubt there was a tendency resulting from the physiological state, but which was indefinitely aggravated by the injudicious use of chloroform; the proof being that it diminished, or even practically ceased, immediately that the drug was discontinued. Further, the habitual use of chloroform produces in a certain number of instances, degenerative changes which accurately imitate the degradation of tissues produced by chronic drink: at least, such is my distinct belief. Although in circumstances of ordinary chloroform narcosis, induced once for a definite surgical purpose, there seems no doubt that the whole of the anæsthetic completely leaves the organism by exhalation within an hour or two, it is probable that this is not the case where the patient is constantly saturated with the drug in frequent repetitions every day of his life. What the further chemistry of the process is we cannot at present say: it is impossible to tell whether the chloroform does or does not become oxidized within the body, as alcohol certainly does. But of the positive character of the general vital result I think there can be little doubt: quite apart from the damage to appetite and digestion which accrues, there is apparently a visible increase in the rapidity of those degenerative changes which give the organism the characteristics of old age.

Dr. A. cautions the profession against recommending chloric ether (which is simply alcoholic spirit impregnated with chloroform) as a remedy against depression of spirits, nervousness, &c. "It is just the kind of remedy," he says, "likely to be taken lavishly and thoughtlessly for such distress, more particularly, as women suffer at the menstrual period: and there ought to be no disguising the fact, that its use under such circumstances, without strict medical regulation and control, is likely to degenerate into a kind of tipping only a little less mischievous and degrading than ordinary alcoholic excess."

14. *Elimination of Alcohol.*—Dr. A. DUPRÉ, of Westminster Hospital, has recently presented a very important paper to the Royal Society "On the Elimination of Alcohol." Obviously, one of three results may follow the ingestion of that liquid—either all the alcohol may be oxidized, and none eliminated unchanged; or a portion only may be oxidized, and the rest eliminated unaltered; or all the alcohol may be eliminated unchanged. If all the alcohol be eliminated unaltered, it follows that if a certain amount of alcohol be administered daily, the quantity eliminated would increase from day to day, till eventually a state of equilibrium would be attained, and the amount eliminated each day would equal the amount ingested. If, on the contrary, all the alcohol were either oxidized or eliminated within a period of twenty-four hours, no increase in the daily elimination will take place as a consequence of the alcohol diet. The author undertook two series of experiments, in which the quantity of alcohol eliminated by both kidneys and lungs was determined. His results are thus summed up: "The amount of alcohol eliminated per day does not increase with the continuance of the alcohol diet; therefore all the alcohol consumed daily must, of necessity, be disposed of daily; and as it certainly is not eliminated within that time, it must be destroyed in the system. The elimination of alcohol, following the ingestion of a dose or doses of alcohol, ceases in from nine to twenty-four hours after the last dose has been taken. The amount of alcohol eliminated, in both breath and urine, is a minute fraction only of the amount of alcohol taken."

Dr. Dupré confirms M. Lieben's observation that a substance exists in the urine of man, and in the urine of various animals, which is not alcohol, though it yields iodoform. The author found, that after six weeks of total abstinence, and even in the case of a teetotaler, that this substance, the precise nature of which has not been determined, is eliminated in the urine, and perhaps also in the breath. The quantity met with in the urine is very small, and it was found

that after the elimination due to the administration of alcohol had ceased, the amount of the substance eliminated in a given time at the first remained below the quantity normally excreted, and only gradually rose again to the normal standard. The presence of this body in urine must throw great doubt on many of the previous determinations of alcohol in urine. It passes over with the first portions of the distillate, it yields acetic acid on oxidation, and gives the green reaction with bichromate of potash and sulphuric acid, yields iodoform, and its aqueous solution has a lower specific gravity and a higher vapour tension than pure water.—*Med. Times and Gazette*, Feb. 17, 1872.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

15. *Lactic-Acid Theory of Acute Rheumatism*.—DR. BALTHAZAR W. FOSTER relates (*Brit. Med. Journal*, Dec. 23, 1871) two cases of diabetes, for the cure of which lactic acid was given, and in both the medicine caused an attack of acute rheumatism.

Mr. F. remarks, "the above record contains an account of the joint-symptoms which were observed in two cases to follow the administration of lactic acid. In the first case, at least six well-marked arthritic attacks occurred; in the second case, under conditions less favourable for observation as to duration of treatment and place, one well-marked attack occurred. The phenomena corresponded in all respects to those which are characteristic of acute articular rheumatism. They came on when the acid was taken, and ceased when it was discontinued. When moderate quantities of the acid were tolerated, an increase in the dose was succeeded by the painful inflammation of the joints. Coinciding with the development of the articular affection was the appearance of perspiration, at first only slight, but afterwards, in the more severe attacks, copious and acid.

"These facts have dispelled the last lingering doubt in my mind as to the truth of the lactic-acid theory of rheumatism. At first I doubted the connection between the administration of the acid and the production of the rheumatic phenomena. In my scepticism, I regarded it as an accidental combination. The recurrence of the joint-symptoms, however, on March 13th, following distinctly on the repetition of the lactic-acid mixture, shook my disbelief. The coincidence of joint-attacks with the use of the drug might occur once, and I thought even a second time; but, when I found it occur over and over again, there was no room left for the hypothesis of coincidence. To refer Wright's attacks to a series of accidental combinations requires, in my opinion, a much livelier faith than to accept the lactic-acid theory of acute rheumatism. If, to some, Wright's case presents not evidence enough in the beautifully typical character of the artificially produced disease, and in the precision with which it could be manufactured at the will of the experimenter, then the second case comes in to refute any explanation founded on the assumption of an idiosyncrasy on the part of one patient.

"In health, no doubt, much larger quantities of lactic acid than any given in my cases would be excreted without producing any perceptible disturbance in the bodily functions. The acid would escape by the skin, the kidneys, or, after oxidization, as carbonic acid and water. It cannot be justly argued that the quantities of acid taken by my patients were too small not to have escaped in this way. The conditions under which the drug was given must be borne in mind. In diabetes we have a state of suboxidization very unfavourable to the conversion by oxidation of new compounds; and in Wright's case this was aggravated by the serious pulmonary complications. Associated with these, there was a dry and branny state of the skin highly unfavourable to the elimination of the lactic acid by one of the common channels. Lastly, the well-known persistent acidity of the urine in diabetes points to a pre-existing

hyperacidity of the fluids. These considerations are, I think, important, as defining the conditions under which the experiments were made—conditions most favourable to the development of the specific effects of the lactic acid. It was the combination of all these which rendered Wright so susceptible to the action of the drug. By the absence of one of them (the lung-complication), and the minor degree of glycosuria, we may probably explain the slighter susceptibility in the second case. The larger doses of acid which Wright was able to take occasionally, towards the close of his stay in the hospital, find an explanation partly in his more careful management of the remedy, partly in an acquired toleration of it, and partly in the great improvement which occurred under treatment in the state of the respiratory organs and in the sugar-excretions. * * *

“In this communication, my object has been to lay before the profession facts which have an important bearing on the origin of a common and serious malady. If, by pointing out the nature of the poison of acute rheumatism, they help in the smallest degree to improve therapeutics, they will not have been observed in vain.”

16. *Cause of Diabetes.*—A most interesting and important addition to our knowledge of the cause of diabetes has been recently made by Professor CYON, in a paper which he, along with M. ALADOFF, has communicated to the Imperial Academy of Sciences at St. Petersburg, and which is published in the *Mélanges Biologiques*. Several years ago, Claude Bernard put forward the theory that in diabetes the functional activity of the liver is increased, and a larger amount of sugar formed in it in consequence of the vessels of the organ becoming dilated, and the circulation in them more active. The increased activity of the circulation he attributed to some change in the vaso-motor system of the hepatic vessels, which allowed their walls to relax in a similar way to those of the ear of the rabbit after the sympathetic has been divided in the neck. He ascertained that the formation of sugar could be greatly increased, and diabetes produced, by galvanizing the pneumogastric nerves in the neck, or by irritating their roots by puncturing them at their origin in the fourth ventricle. At the same time that the production of the sugar was increased by the puncture, the vessels of the liver became much dilated. It might thus have been supposed that the nervous influence which originated in the medulla oblongata and caused diabetes, passed down to the liver through the vagi. This, however, was not the case; for, when these nerves were cut and their ends galvanized, diabetes was only produced by irritation of the central end, but not by irritation of the peripheral extremity. Diabetes could also be induced by puncturing the fourth ventricle, just as readily after the vagi were cut as when they were intact. If the splanchnic nerves were cut before the fourth ventricle was punctured, no diabetes was produced; but if they were cut after the puncture had been made, their section did not remove the diabetes which was present.

From these and other experiments, Bernard concluded that the air inhaled during respiration irritated the ends of the vagus in the lung; that this irritation was conducted up to the medulla oblongata, and was thence reflected down the splanchnic nerves to the liver, and caused the formation of sugar. By what way the nervous influence passed from the medulla to the splanchnics, however, was not ascertained; and no very satisfactory explanation could be given of the fact that section of the splanchnics after puncture of the ventricle did not remove the diabetes. Some light was thrown upon this question by the observations of Eckhardt and Pavy, but it has been reserved for Cyon completely to solve it.

Pavy noticed that section of the superior cervical ganglion of the sympathetic might cause diabetes; and Eckhardt found that it followed section of the last cervical or any thoracic ganglion, just as certainly as puncture of the fourth ventricle. Section of the splanchnic nerves did not produce it.

Eckhardt tries to explain this difference between the effect of dividing the ganglia and the nerves by supposing that diabetes is due to irritation of the ganglia by the exposure of their cut surfaces to the air, and that, when the

nerves are divided between the ganglia, paralysis and not irritation is produced. If this hypothesis were true, diabetes should not occur when the ganglia are completely extirpated; but Eckhardt does not say whether it does or not, and therefore Cyon determined to perform this operation, and thus test the truth of Eckhardt's theory. When he cut through the last cervical or the first dorsal ganglion, he found, like Eckhardt, that diabetes was produced; but it occurred just as certainly when both ganglia, or even the last cervical alone, were cut completely away, or when the nerve-fibres entering this ganglion were all cut through, although the ganglion itself was never touched. This clearly showed that Eckhardt was wrong, and that the diabetes occurring after operations on the last cervical or first thoracic ganglia was due to paralysis of the nerves which were connected with them, and not to irritation of the ganglia themselves. He next ascertained that all the fibres entering these ganglia had not the same effect in causing diabetes, for it occurred when either of the branches which pass along the vertebral artery from the spiral cord to the last cervical ganglion, or the two fibres which connect it with the first thoracic ganglion, were divided, whereas section of the other nerves proceeding from the ganglion did not do so. It thus became evident that the nerve-fibres whose paralysis causes diabetes, come from the spinal cord through the vertebral nerves to the last cervical ganglion, and pass from it to the first dorsal in the two connecting branches which, in their course from one ganglion to another, inclose the subclavian artery, and form the annulus of Vieussens. So much having been ascertained, it would seem easy enough to trace the nervous path down the gangliated cord and splanchnics to the liver; and one would expect that, by dividing the cord in the thorax, and thus paralyzing the fibres going to the liver, diabetes would be produced as certainly as when they were divided at the level of the vertebral artery.

Such, however, was not the case; for not only did subcutaneous division of the gangliated cord between the tenth and twelfth ribs not produce diabetes, but, if the cord were cut before, or at the same time as the last cervical or first thoracic ganglion, the diabetes which would otherwise have occurred did not appear. But when diabetes was first produced, division of the cord did not diminish it, or even hinder its increase, just as Bernard had found with regard to the splanchnics. In order to explain this apparently contradictory result, Cyon set about investigating the way in which the fibres of the annulus of Vieussens affect the liver, and more especially the circulation in it.

On irritating these fibres, he found that a number of fine white lines appeared round the lobules of the liver, in the position occupied by the small branches of the portal vein and hepatic artery; and these were so numerous as to produce the appearance of whitish spots on the organ, which continued while the irritation lasted, and disappeared after it ceased. At the same time that these spots appeared, he noticed that any cut or tear in the liver bled less freely than before. This indicated that contraction of the portal vein or hepatic artery, or of both, had been occasioned by irritation of the annulus; but, in order to make assurance doubly sure, as well as to find out whether it was the artery or the vein that contracted, he put a T-cannula into the hepatic artery, and connected it with a manometer. On then irritating the annulus of Vieussens, the pressure rose in the manometer as much as thirty to seventy *millimètres* of mercury; while in the carotid it only rose five to ten *millimètres*. To remove the last objection which might be raised, and show conclusively that the rise of pressure was due to contraction of the branches of the hepatic artery in the liver, and not to any other cause, he compressed the artery beyond the point where the cannula had been inserted, so that no change in the calibre of its branches could have any influence on the blood-pressure in its trunk. On again irritating the annulus, he found that no alteration in the pressure was produced. Division of both annuli produced, as was to be expected, dilatation of the branches of the hepatic artery, and fall of the blood pressure in it. When the portal vein was experimented on in the same manner, the pressure only rose ten or twelve *millimètres* during irritation; and he thinks this is probably due indirectly to the change in pressure in the artery.

These experiments completely prove that the vaso-motor nerves of the

hepatic artery are contained in the annulus of Vieussens; that their division causes the vessel to dilate, and at the same time produces diabetes. The theory of Bernard, that the diabetes depends on the dilatation, and on the consequent rapid circulation of blood in the liver, is thus rendered in the highest degree probable. But why should section of the splanchnics or of the gangliated cord prevent the production of diabetes, but not remove it when present? This Cyon also explains. These parts of the nervous system contain the vaso-motor fibres for the vessels of the intestines; and, when they are cut, the vessels dilate, and blood accumulates in them to such an enormous extent that there is either too little blood remaining, or it is under too low a pressure for the circulation in the liver to become increased above its normal even although its vessels be dilated. When the hepatic vessels, however, are dilated first, the blood continues to pass through them, and diabetes continues, even although the intestinal vessels have become relaxed.

The researches of Cyon, along with those of Bernard, render our knowledge of the part which the nervous system plays in influencing the production of sugar in the liver, and in causing diabetes, in so far as this disease depends on increased formation and not on diminished combustion, tolerably clear, though still incomplete; and enables us to form some kind of idea of the manner in which opium and allied remedies prove beneficial. The irritation which the inspired air produces on the ends of the vagi in the lungs is conveyed up these nerves to the medulla oblongata, and there exerts an inhibitory action on the vaso-motor nerves of the liver. When the irritation is increased, as by galvanizing the vagi, the inhibitory action is so great as to produce complete paralysis of the vaso-motor nerves, and induce diabetes; and, on the other hand, when the vagi are cut, the vaso-motor nerves act more powerfully, causing the vessels of the liver to contract, and the production of sugar to diminish, as Bernard found that it did. It seems, therefore, not improbable, that the beneficial action of opium and its alkaloids is due to their lessening the excitability of the vagus. We can hardly suppose, however, that diabetes is not sometimes due, either in whole or in part, to diminished combustion; and the causes of this still remain a matter for future investigation.—*Brit. Med. Journal*, Dec. 23, 1871.

17 *Pathology of Scarlatina, and the Relation between Enteric and Scarlet Fever.*—This is the title of a paper read by Dr. JOHN HARLEY before the Royal Medical and Chirurgical Society, December 12th, 1871. In the first portion of the communication, the author treated of the morbid anatomy of scarlatina, and gave the details of twenty-eight cases of his own observation. Of these, the greater number died on days ranging consecutively from the third to the fifteenth; the remainder died on the seventeenth, twentieth, twenty-fourth, twenty-ninth, thirty-third, forty-first, and sixty-ninth days. More or less albuminoid and fatty degeneration of the kidneys existed in six of the cases, and these died on the fifteenth, seventeenth, twentieth, twenty-ninth, forty-first, and sixty-ninth days respectively; the kidneys were healthy in the remainder. The pathological changes common (with a few exceptions depending chiefly upon the time of death) to all the cases were as follows:—

1. *The Formation of Fibrinous Clots in the Heart and Great Vessels during a Pyrexial Condition at any Period of the Disease.*—This was the commonest cause of death during the early stage. It was indicated in life by the reduction, often very sudden, of a full and bounding pulse of 120 to a drizzle of 150 or 160 almost imperceptible impulses; and the failure of the heart's action was commonly attended with orthopnoea and delirium, from obstruction of the pulmonary and cerebral circulation. On opening the body before it had lost a degree of temperature, and while the blood was hot and fluid, the right heart would be found distended partly with dark blood, which coagulated on exposure; and partly, sometimes chiefly, with a large, firm, white bifid clot, continuous through the auriculo-ventricular opening. Each portion was interlaced with and firmly adherent to the tendinous cords and muscular bands of the cavity in which it lay; and each portion sent a rope-like prolongation into the orifice of the great vessel connected with the cavity. These processes fre-

quently were prolonged, in ramifications corresponding to those of the blood-vessel, into the cranial cavity, and into the lungs. These partial casts of the great vessels were often nine inches long, and occupied vessels of the sixth and seventh degrees of ramification.

2. *Marked Derangement of the Hepatic Function.*—The bile was examined in twenty cases. In five only was the secretion normal, and in these cases death occurred on the third, fourth, twenty-fourth, forty-first, and the sixty-ninth days respectively. In the remaining fifteen cases the bile was deteriorated. In two the coats of the gall-bladder were injected, and the mucous membrane rose-coloured. In the first of these cases there was a complete absence of bile, there being only a few drops of colourless alkaline fluid. In thirteen other cases the bile was greatly deficient in solid matters. The specific gravity did not exceed 1014, and the amount of solid matter in 1000 grains in no case amounted to more than 36.4 grains. In one case there were only 11.1 grains of solid matter in 1000 grains. In the majority of the cases the bile was turbid from epithelial *débris*, but on standing it became transparent, and resembled pale urine. In all the thirteen cases there was a notable deficiency of biliary acids, and in two a complete absence. The colouring matter of the bile was present in every case. If, as rarely happened, the bowel contained solid feces, it was of a pale ochre or sulphur colour. But the fecal matters were commonly fluid, grumous, or flocculent, often slimy, and of a pale ochre colour. Such, also, were the characters of the stools before death in many cases.

3. *General inflammation of the lymphatic glands* was present, usually confined to those of the neck, but occasionally extending to those of the extremities; of the spleen and mesenteric glands; and of the whole of the solitary and agminated glands of the alimentary canal, but commonly affecting only those of the fauces, and of the ileum and colon. These morbid appearances were remarkably uniform, and were observed in every case. The tonsils and solitary glandulæ of the tongue, and the external glands of the neck, were perceptibly affected in every case. In several cases large buboes formed in the neck; in three these were associated with diffuse cellulitis and purulent infiltration; and in one of these the popliteal and axillary glands and their surrounding connective tissue were similarly affected. In these cases the glands themselves were slow to take on suppurative action; and, although they were generally much enlarged and purple, comparatively few had softened centres. The spleen was enlarged in twenty-three cases, and in five of these it was increased to nearly twice its ordinary bulk. In two others it was not examined; and in the remaining two cases it was of the normal size. The mesenteric glands were swollen and inflamed in every case. In eight cases the mesentery formed a thickened, heavy, lobulated mass, and many of the glands were as large as walnuts or pigeons' eggs. Even the small glands in the attached borders of the transverse and descending mesocolon were purple and turgid. The solitary glandulæ of the ileum were in a condition of psorentery—*i. e.*, forming white granular and more or less hard elevations, like a thick sprinkling of large sago-grains upon the mucous membrane—in fourteen cases. In six other cases, the solitary glandulæ were only partially affected, the swelling was more diffuse, the glandulæ being only moderately raised; but they were always deeply injected, and in some cases had an abraded appearance. In three cases, in which death occurred on the eleventh, seventeenth, and sixty-ninth days of the fever, there was only very slight swelling of a few of these glands; and in four cases, in which death occurred on the fifteenth, twenty-fourth, twenty-ninth, and thirty-third days respectively, the glandulæ were altogether unaffected. The agminated glands of the ileum were more or less swollen and inflamed in every case but one—that in which death happened on the thirty-third day. In one case (death on the seventeenth day from suppurating buboes in the neck), there was only very slight swelling. In all the other cases the results of inflammatory action were decided, and in many cases severe. The glands were commonly raised the eighth of an inch above the surrounding mucous membrane, than which they were always more deeply injected. In the greater number of cases the mucous membrane was generally pale, and sometimes thin and bare, while the agminated glands were of a vivid red or claret colour. The inflam-

matory action was usually confined to the glands in the lower third of the ileum, but in three or four cases the whole of the patches from the jejunum downwards were affected. In some of the larger glands isolated foci of inflammatory action were occasionally observed. The interfollicular ridges were often the eighth of an inch wide, giving to the paler glands a spongy appearance; but these ridges were as often vascular, with fine hair-like turgid vessels, and in some cases they were prolonged into folds a quarter of an inch in length. In two or three cases an almost bleeding gland had a softened, abraded surface. The mucous membrane of the ileum was itself severely inflamed in two or three cases, and was covered by a thick, adherent layer of white, opaque mucus. The solitary glandulæ of the large intestine were enlarged and inflamed in eight cases. In one of these there was acute desquamation of the mucous membrane of nearly the whole of the bowel. In another case the cæcum was severely congested. In those of the remaining cases in which the large intestine was examined, it was quite healthy.

On taking the above described pathological conditions into one general view, it appeared that there was an increase of fibrin in the blood during an attack of scarlatina, and that death was likely to occur during the first week from its deposition in the heart and great vessels; that the condition of the biliary function was such as to lead to an outbreak of diarrhœa, if this had not already happened; that a latent enteritis, sometimes general, but commonly only affecting the solitary and agminated glands, existed in a high state of development during the pyrexial stage of scarlatina, ready to declare itself openly upon very slight provocation; that this intestinal affection was only a part of a general lymphatic inflammation involving the whole of the lymphatic system, including the mesenteric glands and the spleen in one common action; and, further, that this condition might persist in some degree, either in the bowel or the mesentery, as late as the sixty-ninth day, and without any outward indication of its presence throughout.

From this view one general conclusion was inevitable—viz., that the pathological changes accompanying an ordinary attack of scarlatina included all those of the first stage of enteric fever, and that the transition from one disease to the other was but a natural pathological sequence, readily determined by any cause which might increase the intestinal irritation.

The proofs of this interchange, or sequence, constituted the second part of the subject, and contained accounts of several original observations.—*Brit. Med. Journal*, Dec. 23, 1871.

18. *Unilateral Atrophy of Tongue*.—Mr. WM. FAIRLIE CLARKE communicated the following interesting case of this to the Royal Medical and Chirurgical Society, November 28, 1871: Mrs. H., aged 45, had a malignant tumour removed from her right breast on February 16, 1870. The wound healed slowly, but satisfactorily. On April 15 she complained of cough and slight dyspnœa, the latter only noticeable after exercise. Under treatment, the cough soon disappeared, but the dyspnœa still continued. On October 3, Mr. Hume, of Islington, was called suddenly, and found her suffering from a deep-seated pain on the right side of the head, of periodic character, returning each night between 1 and 2 o'clock A.M., and rendering her for some hours incoherent and unmanageable. The only thing which gave her relief was morphia in grain doses. At this date, atrophy of the tongue was first noticed, though it was not then so marked as it afterwards became. On March 29, 1871, Mr. Hume was again urgently required to attend, and found the patient suffering from all the old symptoms in an aggravated degree; she had also alarming dysphagia, with paroxysms of suffocation, which recurred about three times in the twenty-four hours. On being asked to protrude the tongue, she always appeared unable to do so at first; and, after a few moments, put it out very slowly. The tongue was puckered and crimped along its whole right side from base to apex, mostly at the anterior two-thirds. An actual loss of substance had taken place, but it was bounded exactly by the median raphe; and the contrast between the plumpness of the left side and the shrivelled aspect of the right was very striking. When it was protruded, there was no

deviation to either side. Articulation was slow and difficult. There was great pain along the right side of the neck, with a certain fulness and turgescence of the vessels; but no tumour could be felt in any part of the mouth or neck. Together with these symptoms, there were general cachexia and great prostration. From this time the dysphagia and dyspnoea gradually became worse; and on June 7, in one of the attacks of suffocative cough, the patient died. At no time during her illness had there been any paralysis of the extremities, and her intellectual faculties remained clear throughout.

Unfortunately, no necropsy could be obtained; but, looking at all the circumstances of the case, Mr. Clarke thought there was good reason to believe that the ninth nerve on the right side was involved in a secondary cancerous tumour, such tumour being situated either within the cranium or at the upper part of the neck, and pressing upon the right hypoglossal nerve, and more or less implicating the pneumogastric and glosso-pharyngeal nerves as well.

The writer then proceeded to compare with this case two other instances of well-marked unilateral atrophy of the tongue; the one related by Dupuytren in the *Leçons Orales* (lecture on hydatid tumours); the other by Sir James Paget, in the third volume of the *Transactions of the Clinical Society*. The experience of Romberg and of Bidder was adduced to show that this remarkable condition of the tongue might be produced by a lesion of the ninth nerve; and to establish the same point the author related an experiment that he had made. On October 25, he divided the right hypoglossal nerve in a rabbit, and took out a piece about a quarter of an inch in length. Immediately after the operation, and during the whole time that the animal was under observation, the tongue was strongly protruded to the right side. On November 27 the rabbit was killed. It was found that the nerve had united by a soft, gelatinous, and highly vascular substance, of about twice the ordinary calibre of the nerve. The right side of the tongue, along its posterior half, was slightly wasted and flattened.

The preparation was exhibited; and an outline sketch, illustrating the case which had been related, also accompanied the paper.

Dr. John Harley agreed that the lesion of the tongue in Mr. Clarke's case was probably due to cancer pressing on the ninth nerve. But lateral deviation of the tongue also took place in some cases of scarlet fever, where the deeply-seated glands of the neck were enlarged and pressed on the hypoglossal nerve. He had met with this in a lad aged 15, who had also occipital pain and vomiting; the tongue deviating to the right when protruded. Dr. Charlton Bastian thought it by no means certain that atrophy of the tongue was always produced by paralysis of the hypoglossal nerve. At the Hospital for Paralysis and Epilepsy, he had seen a case where the only nerve that could be found affected was the sixth; the tongue was much wasted, but the deviation was very slight; and when the wasted half was tested by faradization, decided contraction took place. Dumesnil had a case of general muscular atrophy with paralysis of the tongue and face on one side; there was complete paralysis of the hypoglossal nerve, but no wasting of the tongue. The anterior roots of many of the spinal nerves were much atrophied; as also were the roots of the facial and hypoglossal nerves, while those of the fifth pair were healthy. Dr. Jaccoud, in referring to this case, explained it by supposing that the sympathetic or trophic nerve-fibres went to the tongue with the branches of the fifth rather than with those of the motor nerves. Dr. Habershon referred to the case of a woman in Guy's Hospital in whom, while she was suffering from cancer of the breast, the right side of the tongue became flaccid and wrinkled, the organ being turned to the right. Speech and the sensation of the organ were unimpaired. The right sterno-hyoid muscle was paralyzed; and the posterior belly of the omo-hyoid contracted on each side. The patient had pain at the back of the head, and pain and tenderness down the spine. After death (which took place from wasting), numerous soft cancerous tubera were found implicating the bones of the skull and the dura mater; and one of them crept up from the foramen magnum to the internal auditory meatus, involving the eighth and ninth nerves. The proximity of the disease to the meatus explained a slight affection of the facial nerve which had been noticed during life. The affection of the tongue was evidently due to the interference with its nerves by the me-

dullary cancerous growths. Dr. Hughlings Jackson thought Mr. Clarke's case a very rare one. In no instance had he seen palsy of the tongue, either on one side or on both sides, without palsies of other parts. Thus, in a case of syphilitic disease there was palsy of the left portio dura and eighth nerves, as well as of the left ninth nerve. In a case of a tumour of the medulla oblongata and pons Varolii, there was palsy of the fifth, sixth, seventh, and eighth nerves, as well as of the ninth, on the left side, and paralysis of the right arm and leg. He mentioned a case of a man who found out one morning that he was hoarse, and that his tongue was turned to one side "like a hook." There was palsy, with wasting, of the right side of the tongue, paresis of the right side of the palate, and palsy of the right vocal cord. As the man was past fifty years of age, as he had albuminuria, and as the symptoms came on in one night, the probability was that they were the result of a clot. In one case of sudden palsy of the tongue, palate, and orbicularis oris which he had seen, Dr. Lockhart Clarke discovered relics of effusion of blood in the medulla. Dr. Lockhart Clarke's researches, showing the close relation of the lingual and spinal accessory nuclei, gave the explanation of cases of lesions in the medulla producing palsies of the several factors concerned in articulation, deglutition, and voice. Dr. Hughlings Jackson had never seen wasting of the tongue from paralysis of the fifth nerve, although the temporal and masseter muscles wasted. Dr. William Ogle referred to a case related by Dr. Hyde Salter in his article on the tongue in the *Cyclopædia of Anatomy*, in which paralysis and atrophy of the tongue were produced by a wound of the neck injuring the hypoglossal nerve. He had often divided the hypoglossal nerve in animals, and had found that the tongue did not always deviate towards the side of the lesion; sometimes it was protruded straight, sometimes it was even turned a little to the opposite side. This last occurrence was difficult to explain; it might occur in cases of disease of brain, where the lesion was double; or possibly the observation might be made when the tongue was partially withdrawn after protrusion, and when, from a reversal of the muscular action, it would appear somewhat pushed to the other side. Section of the hypoglossal nerve caused the tongue to be as it were turned up, the paralyzed side being the higher. He asked if this had been noticed in disease. Dr. Hilton Fagge had seen a case of unilateral atrophy of the tongue in a boy aged $5\frac{1}{2}$ years. A piece of the odontoid process was found sticking up through the dura mater. Mr. Thomas Smith thought the action of the genio-hyo-glossus muscle sufficient to draw the tongue over to the paralyzed side. This muscle protruded the organ; which, when outside the mouth, was moved by the stylo-glossus muscle; and this, or the lingualis, might draw the tongue towards the sound side. Mr. Henry Power said that the theory of the existence of trophic nerves was almost entirely based on observations of the effect of injury of the fifth nerve on the eye. He thought, however, that little if anything was known regarding trophic nerves. In Mr. Clarke's case, he thought the lesion was not connected with the fifth nerve, but with the hypoglossal. In the case of the eye, he believed that the increased liability to inflammation after injury of the fifth nerve arose from the organ being more exposed to injurious influences acting from without. Mr. Soelberg Wells referred to some experiments of Meissner, in which sloughing of the cornea did not occur after experiments on the fifth nerve unless the innermost fibres were divided.—*Brit. Med. Journ.*, Dec. 9, 1871.

19. *Hysteria*.—Dr. EDW. J. TILT gives (*Brit. Med. Journ.*, Dec. 16, 1871) the following as his views of hysteria: "I think it requires two factors for its production—1. A predisposing nervous state; 2. The stimulus of some determining cause.

"Of the predisposing cause, we may safely say that it must depend on that modification of the nervous system which makes the nervous system of woman more prone to emotion than her mate; otherwise, how is it that the disease is in the main feminine, and only met with in men whose nervous systems are built on the feminine type? We moreover know that, although a disease of every climate and social condition, hysteria is most frequent in women of the upper classes of the civilized races, in whom emotionalism is intensified,

at the expense of reason and self-control, by injudicious training in childhood, and the subsequent pampering that ill fits them for the trials of life. We can go no further than to say that this undue action of the brain is the predisposing cause of hysteria. It may be that, in severe cases, this predisposition may be so strong as to be of itself sufficient to bring on the disease. At all events, we know that there are various degrees of intensity in this predisposition, and that the slightest determining cause will make some women hysterical. In a family with which I am intimate there are ten healthy children, whose parents are not in the least nervous; but a paternal uncle is insane; two maternal uncles died of delirium tremens; one brother has been epileptic from childhood; and a sister died of meningitis. Out of these ten children, two little girls—one seven the other eight years old—burst into tears if they are looked at, if they are not placed as they like at table, and are not helped in their right turn. They pass rapidly from laughter to tears, which will flow for hours and very abundantly. They have sometimes globus hystericus. These symptoms have been repeatedly quelled by preparations of iron; but they occasionally return, and must be taken as evidences of the hysterical state, very likely to be followed by the worst manifestations of the disease on slight provocation.

“With regard to the determining causes of hysteria, I must first mention those that intensify all nervous affections—debilitating influences, like loss of blood, diseases, physical shocks, mental and emotional shocks, prolonged worry, and want of sleep. Neither should I omit the contagion of one hysterical nervous system on another predisposed to become so.

“Coming to the most important causes of hysteria—those originating in the viscera—I will first remark that, as with our mental acts, so with our emotions, they are conceived in the brain; and that old physiology and the poetry of all times have erred in placing the actual origin of our passions in our abdominal organs. Still universal consent shows how strongly they are acted on by emotion that, in fact, in the viscera are the reflex centres of emotion that stimulate the nervous system to emotional acts.

“If I have, therefore, been correct in ascribing hysteria to undue action of the brain as an organ of emotion, a potent cause of hysteria must be found in undue action of one or other of our viscera. It is, no doubt, wonderful that bodies shared by us with the lower animals should not only support the bodily structure, but, by their healthy action on the brain, give lucidity to the mind and warmth to the feelings, making genius more admirable and charity more godlike. This sounds like poetry, but becomes plain matter of fact when we remember how often anger has caused jaundice, and how frequently a host of distressing mental and emotional sensations are due to that state of liver and stomach derangement which we call biliousness, and which doubtless acts by deranging the functions of the neighbouring great ganglia. I have likewise seen repeated attacks of hysteria brought on by biliousness, and their recurrence prevented by such measures as are best calculated to prevent biliary derangement. Such cases are, however, very rare, when compared with those in which the determining cause of hysteria is an ovarian or uterine ailment. The statistics of Landouzy, Brierre de Boismont, and Dubois d'Amiens, as well as the recent assertions of Dr. Crichton Browne, show this to be the case; and those who deny it must bring forward similar masses of equally well-digested facts.

“What, then, are the diseases of the sexual system that cause hysteria? Not those in which the structure of the ovary and womb are almost destroyed—acutely, as in abscess of the ovary, slowly, as in ovarian tumours and uterine cancer—but, as a rule, the mildest forms of anæmic ovarian uterine disease; showing that it is not the intensity of the disease that causes hysteria, but the fact of its coincidence with a nervous system prone to become hysterical. Thus, hysteria is most frequently caused by those limited ovarian lesions that I have described as subacute ovaritis, lesions depending on morbid ovulation, and that frequently pass unrecognized under the disguise of diseases of menstruation. Of uterine affections, it is chiefly the milder sort—that are mucous membrane deep—which cause hysteria; and sometimes, by applying nitrate of silver to an ulcerated cervix, we most unwittingly bring on an attack of hysteria, in

patients who presented no signs of its being likely to come on, and thus experimentally prove that the two complaints may stand in relation as cause and effect. On one occasion, I thus brought on an attack in a lady, who had never before had one.

"How is the brain, laden with emotion, to be brought into contact with the viscera, the reflex centres of our emotions? The late Dr. Todd thought that hysterical delirium and other hysterical phenomena might be explained by toxæmia resulting from retained menstrual blood: but hysterical phenomena frequently arise before there is any menstrual blood to be retained; and Dr. Handfield Jones agrees with me, that with hysteria, as with other neuroses, there is no blood-poisoning. The distance between the brain and the viscera, between mind and appetite, is bridged by the ganglionic nervous system, which unites the viscera by a federal bond of union, and places this federation in intimate connection with the cerebro-spinal system. When the ganglionic nerves transmit healthy impressions to the brain, they pass unnoticed; but a hysterical fit shows how differently nerves and ganglia act when visceral action is more or less diseased.

"In many hysterical fits, after a period of incubation, in which the system seems to become more and more charged with excitement, the attack begins by pain in the womb and ovaries. Soon the hysterical aura passes to the epigastric ganglia, and, concentrating there, gives rise to the suffocation and distress characteristic of the disease. Ascending still higher, the hysterical aura reaches the cervical ganglia, producing the sense of strangulation; it then attacks the brain, deranging its functions in ways too numerous to be mentioned, and, at the same time, deranging more or less the functions of the spinal cord, according to the degree of tension of the hysterical aura. For a time pain will thus concentrate—sometimes in the brain, sometimes in the visceral ganglia—and the patient collapses into prostration when the system has been sufficiently relieved by convulsions and by critical discharges. It has been possible, in cases published by Romberg and Schulzenberger, to produce the succession of phenomena just described by simply pressing on the ovaries; and I have repeatedly brought on unconsciousness in a nervous patient of mine by pressing the left ovary."

20. *Spontaneous Hydrophobia*.—The following very interesting case of this was reported to the Belgian Academy of Medicine by M. GUILLERY. The subject of it was a vigorous man æt. 71, tailor, who had always had the best of health, was attacked on February 5, 1871, with pain in the head, neck, and temporal region, which he attributed to cold. He thought little of it until he found, in the evening, on placing his hands in water for the purpose of washing them, that he was seized with a violent and painful spasm of the throat, and a great repugnance to repeat the immersion. Feeling thirsty, he tried to drink some water, tea, and coffee, but at each attempt the spasm returned and prevented him. This state of things continuing, M. Guillery was called to him on the 7th, and found him quite calm, speaking of his malady more as a curiosity than as a suffering. He swallowed some meat without difficulty, but dared not appease his ardent thirst. Introducing fluid into the mouth without seeing it, by means of a tube, had also brought on the spasms. Persuaded to try, he managed by an immense effort to get down two teaspoonfuls of coffee, but declared that he preferred enduring the thirst to repeating the painful attempt. The mere sight of liquid brought on the spasms, accompanied by paroxysms of intense and prolonged fear. The liquid once removed, he conversed calmly upon his strange malady. His pain of the head had disappeared; there was no fever or acceleration of pulse, and his tongue was only whitish. On the 8th, the symptoms described were found persisting and aggravated, cruel suffering having been produced by attempting to wash the hands. The only thing the patient could take was a few morsels of bread dipped in wine, which had to be conveyed from behind, so that he should not see them. Mere looking at a glass of water produced a fearful spasm. An hour after he died, declaring that the attempt to do this had killed him. No post-mortem was performed. It is quite certain that he had not been bitten by any dog, and from this M. G. says we must admit that hydrophobia and the "rage" may exist independently of each other,

and that we are authorized to conclude, 1st, that the "*rage*" alone is a disease necessarily communicated to man, and that hydrophobia is one of the symptoms more or less frequently present. 2d. That hydrophobia is a distinct neurosis, which may occur spontaneously in man, and all the cases of which hitherto observed have been speedily fatal.—*La Tribune Médicale*, Jan. 21, 1872, from *Bulletin of Belgian Academy*, No. 8, 1871.

21. *Epidemic of Essential Jaundice*.—M. DECAISNE communicated to the French Academy of Medicine an interesting account of such an affection which prevailed last autumn in Paris and its environs. His personal experience relates to twenty-eight cases (occurring between October 15 and December 8), seventeen being men from 21 to 61 years of age, and eleven women of from 17 to 45. With the exception of five of the cases, the disease appeared in the midst of health, and without apparent cause, the icterus first affecting the sclerotica, and spreading over the body in the course of four or five days. The *velum palati*, in almost all the cases, was of a uniform yellow. There was no fever or diminution of appetite; no pain or tenderness whatever was experienced in the hypochondrium. Under the use of mild aperients, or even mere expectation, the affection passed away in nine or ten days. In five of the cases there was much pain in the loins, itching all over the surface, desire to vomit, and obstinate constipation—symptoms which soon yielded to mild purgatives and abstinence. The persons attacked pursued different occupations, and were placed under different hygienic conditions. Many soldiers, also, of the regiments encamped around Paris, the sanitary condition of which was excellent, also suffered in just the same way. They applied for advice, in fact, not from feeling ill, but on account of their yellow colour.—*Med. Times and Gaz.*, Feb. 3, 1872.

22. *The Biliary Acids in Icterus*.—Dr. E. A. GOLOWIN has found that in a few cases of jaundice, the biliary acids were absent in the urine, and in one case, to which attention is more particularly directed, the jaundice was caused by obstruction of the bile-ducts by gallstones. Some authors have tried to account for the absence of biliary acids in cases of jaundice in which biliary pigment was abundantly present in the urine, by supposing that the pigment resulted directly from changes in the blood-colouring matter, and was not at all referable to the liver, the name hematogenous icterus being invented to indicate this hypothesis. The occurrence of the case of jaundice, produced by obstruction of the bile-ducts, and in which there was no biliary acids in the urine, suggested that the simple long retention of bile might act on the hepatic cells, so as to incapacitate them for forming biliary acids, while the pigment was formed as usual, and it was thought that some of the supposed cases of hematogenous icterus might be in this way explained. With this view the author proceeded to perform certain experiments on animals, in order to determine whether retention of bile has the effect after a time of preventing the formation of the biliary acids. A biliary fistula was first made in a dog, and this was some time afterwards ligatured, so that obstruction was produced. A short time after this latter proceeding, it was found that though the bile-pigment was abundantly present, the biliary acids were not. So that this experiment supports the idea mentioned above. The author supposes that other causes besides prolonged retention of bile may cause the non-secretion of the biliary acids, and that there is no need to invent a hematogenous theory to account for the phenomenon.—*Glasgow Med. Journ.*, Feb. 1872, from *Virchow's Archiv*, vol. liii. pt. iv.

23. *Neuralgia of all three Branches of the Fifth Nerve excited by Syphilis*.—Dr. ANSTIE read to the Clinical Society of London, Nov. 24, the further and concluding history of a case of which the earliest notes were read last session. It was an example of neuralgia of all three branches of the fifth nerve, immediately excited by constitutional syphilitic infection, and which was of recent date. The case was one of a remarkable character. The nerve had been *predisposed* to neuralgic pain; many years before the

syphilitic infection it had been the seat of an ordinary typical *migraine*, of great severity; and at present it was very noteworthy that the painful and tender points were distributed, not according to the type of tertiary syphilis, but according to that of ordinary neuralgia. Moreover, a number of secondary lesions (unilateral facial anæsthesia, unilateral loss of taste in the tongue, unilateral spasm of muscles, etc.) were distributed exactly as such secondary affections were in severe neuralgias where there was no question of syphilis. Besides these curious phenomena, there were a series of paralyses of the ocular muscles, quite of the ordinary syphilitic type. Thirty grains of iodide of potassium daily completely cured the neuralgia, the anæsthesia, the loss of smell and taste, and the muscular spasms, in a little more than a fortnight. The ocular paralysis proved exceedingly obstinate; but the prolonged use of iodide in larger daily doses (forty-five and then sixty grains) at last completely removed it. It was a singular fact that, during the full progress of the muscles toward recovery, unmistakable symptoms of iritis made their appearance; they were checked by a short course of mercury. Such a case as this was sure to be marked, in the future, by the repeated recurrence of tertiary syphilitic nerve-lesions.—*Brit. Med. Journ.*, Dec. 9, 1871.

24. *The Spinal Paralysis of Children; Infantile Paralysis*.—MM. H. ROGER and DAMASCHINO have just completed a series of papers on this complaint (*Gaz. Méd. de Paris*, Dec. 23, 1871), and, at the conclusion, lay down the following propositions:—"1. The alteration peculiar to infantile paralysis is a lesion of the spinal marrow, which causes the atrophy of muscles and nerves. 2. The seat of this lesion is the anterior part of the gray substance of the medulla, where softened portions of spinal substance are seen. 3. This softening is of an inflammatory nature; in fact, simple myelitis. 4. Infantile paralysis should, therefore, be called spinal paralysis of children, and be classed among the affections of the spinal marrow, as depending on myelitis."—*The Lancet*, Feb. 17, 1872.

25. *Intestinal Invagination*.—L. NINAUS relates a case of intestinal invagination occurring in a farmer, 32 years of age, which terminated favourably, after the separation and discharge of a portion of small intestine fifty inches in length. The cause of the invagination was an abnormal fold or pouch-like projection within the calibre of the intestine, proceeding from the submucous cellular tissue. The symptoms produced by this interference with the free course of the intestinal canal occurred suddenly, subsequently to severe bodily exertion. For some months previously to their onset, the patient had been troubled with occasional colicky pains and costiveness. Fæcal vomiting occurred on the fourth day of the attack, the first discharge per anum on the eighth, and the expulsion of the invaginated portion of intestine on the twenty-sixth. There still remained disturbance of digestion and occasional pain.—*Centralblatt f. d. Med. Wissenschaften*, Nov. 18, 1871, from the *Wien. Med. Presse*, No. 40, 1871.

D. F. C.

26. *Suppuration of one-half Lobe of Cerebrum; Consciousness and Ability to Labour intact; Sudden Death*.—Dr. SCHWARTZENTHAL relates briefly the case of a man 30 years of age, a day labourer, who had suffered, for over two weeks, in the commencement of May, in the year 1871, from pain in the head, with languor and want of appetite, followed by a severe fever of an entire month's continuance. After this, apparent convalescence ensued, and the patient resumed his ordinary occupation. About four weeks after he had left the hospital, whilst engaged in an altercation, he received a blow upon the head, and instantly expired. Examination after death showed that the posterior half of the right lobe of the cerebrum was reduced to a circumscribed accumulation of pus, while the anterior half of the lobe and the entire left cerebral hemisphere were of a doughy consistence. The cerebellum was to some extent softened. Up to the period of his death the patient had continued at labour without apparently the least difficulty.—*Centralblatt f. d. Med. Wissenschaften*, 1871, No. 12, from the *Wien Med. Presse*, 1871.

D. F. C.

27. *Pathology of Pyrexia*.—Dr. CHARLES MURCHISON, in his lecture on pyrexia, sums up the pathology of this disease as follows:—

"1. A morbid condition of the blood, due to the entrance of some poisonous matter from without or generated within the body, or to some local injury or inflammation, which exercises a paralyzing influence on certain portions of the nervous system, and particularly on the sympathetic and the vagus.

"2. Increased rapidity of the heart's action is one of the earliest results.

"3. A second result is a rapid disintegration of the nitrogenous tissues into substances of a simpler chemical construction, while little or no fresh material is assimilated to compensate for the loss. Increased temperature, great muscular prostration, and loss of weight are the natural consequences.

"4. The non-elimination, from any cause, of the products of this disintegration gives rise to cerebral (typhoid) symptoms or local inflammations.

"5. The impaired nutrition of the heart itself and of the rest of the body, in conjunction with the polluted state of the blood and the nervous paralysis already referred to, induces in severe cases of fever great weakness of the cardiac contraction, and stagnation of blood in the capillaries in different parts of the body.

"Why it is that the febrile process once lighted up should ever become arrested, and in many instances after a definite duration, is a problem in medical science of which no satisfactory solution has yet been offered."—*Brit. Med. Journ.*, February 17, 1872.

28. *Treatment of Pyrexia*.—Dr. CHARLES MURCHISON remarks (*Brit. Med. Journ.*, February 17, 1872) if the views he has laid down respecting the pathology of fever be correct, our objects in treatment ought to be as follows:—

"1. To remove, when possible, the cause on which the fever depends.

"2. To promote elimination, not merely of any morbid poison, but of the products of exaggerated metamorphosis in the blood and tissues.

"3. To reduce the temperature and the frequency of the action of the heart.

"4. To maintain the nutrition of the tissues, and stimulate the action of the heart by appropriate food and stimulants, taking care, at the same time, not to excite congestion or increase the work of the already overtaken glandular organs.

"5. To relieve dangerous and distressing symptoms.

"6. To obviate and counteract secondary complications.

"How these indications are to be fulfilled will be discussed under the head of individual febrile diseases; but a few general remarks on the treatment of fever in the abstract will not be out of place here, and may save repetition hereafter. You are not to imagine that each fever has a treatment of its own. According to the predominance of certain symptoms, the appropriate treatment will vary greatly in different cases of the same fever, while in fevers widely different in their causes it may be identical.

"1. Unfortunately, it is not often that we have it in our power to remove the cause of pyrexia; but the object is one always to be kept in view, and sometimes the main efforts of our treatment must be directed to secure it; as, for example, when pyrexia depends upon pent-up pus, an obstructed bowel, or gouty, syphilitic, or periosteal inflammation.

"2. The elimination of any morbid poison, as well as of the products of exaggerated metamorphosis, will often be promoted by the judicious employment of diaphoretics, diuretics, purgatives, and emetics. The old practice of commencing the treatment of pyrexia by giving a purgative to unload the portal circulation and promote the action of the liver, is undoubtedly a good one, and is particularly advisable in persons of robust habit, or who live too well. In mild cases of pyrexia, the only treatment necessary consists in the avoidance of any chill, and in the administration of a mild aperient, followed by frequent doses of diuretics and diaphoretics, such as the citrate of potash, or the liquor ammoniæ acetatis with spirit of nitrous ether. Elimination will also be promoted by a plentiful supply of fresh air, which will favour the escape of carbonic acid from the lungs, and by the free use of diluents, which will help to wash away through the kidneys the products of tissue-waste. In all grave

cases of fever you will remember the importance of maintaining the action of the kidneys, and of keeping a good watch on the state of the urine; noting carefully not so much its colour and the presence or absence of lithates (both of which characters will depend much on the quantity), but the quantity and the presence or absence of albumen. When the quantity becomes notably diminished, or albumen appears, advantage will often be derived from hot poultices to the loins, aperients, diaphoretics, diluents, and diuretics. But while you promote elimination, you must take care that the means for this end do not weaken too much the action of the heart; and you must remember that, in some fevers, the natural processes of elimination are excessive, and conduce to dangerous exhaustion and death.

"3. For reducing the intensity of the pyrexia, different measures have been proposed.

"*Bloodletting* was at one time universally resorted to for this object, but in this country it is now entirely discarded, because it was found to increase one of the great dangers in pyrexia, viz., failure of the heart's action. There are few accurate observations on the effects of bloodletting on the temperature of pyrexia; but we know that, when a copious bleeding from the nose or the bowel takes place in enteric fever, although the temperature may fall below the normal standard, it speedily regains its former height, or rises above it.

"*The external use of cold water* is one of the most certain means of reducing temperature in pyrexia, and in certain cases is attended with good results. The attention which this practice is now attracting will justify the following remarks. In the seventeenth century, the brothers Hahn, of Leipzig, treated fevers by the external use of cold water, but their observations were soon forgotten. Towards the end of the last century (1787), cold affusion was proposed by Dr. Currie, of Liverpool, both for arresting and mitigating fever. The patient was seated naked in an empty tub or bath, and several buckets of water, of a temperature of 40 or 50 degrees Fahrenheit, were poured from a height of one to three feet, or more, over the head and chest. He was then hastily dried, and restored to bed, and, in most cases, the operation was repeated once or twice daily. It was stated that, in many cases, if resorted to during the first three days, this treatment arrested the disease; while, in others, it reduced the pulse and temperature, relieved many of the distressing symptoms, and particularly the headache, restlessness and delirium, and conducted the disease to a safer and speedier issue. The affusions were employed at any stage of the fever; but the effects were always most salutary at an early stage. They were said to be contraindicated when the temperature of the skin, ascertained by the thermometer, was not much above the normal standard, or when, notwithstanding an elevation of temperature, the patient complained of chilliness, or suffered from severe diarrhoea or profuse sweating. The wonderful results obtained by Currie were confirmed by numerous observers in different parts of the world, whose testimony is recorded in the third edition of his work, published in 1804.¹ But in the British epidemic of 1817-19, the practice was followed by many with great perseverance, and the general result, according to Sir Robert Christison, was that in very few cases, if any, was the disease arrested by it; that although an abatement of febrile heat and restlessness occurred almost invariably, it was of short duration, and not to be made permanent by any frequency or repetition; that as much good was eventually attained by frequent cold or tepid sponging, together with cold applied to the head; and that often the cold affusion occasioned for a time after each application an intense feeling of pressure and weighty feeling in the brain, which could not be regarded without some uneasiness.² These statements, backed by professional and popular prejudice, account, perhaps, for the subsequent neglect of the cold-water treatment of fevers. But the observations made of late years by Brand, of Stettin, Jürgensen, of Leipzig, Liebermeister, of Basle, Ziemssen of Erlangen, and H.

¹ Medical Reports on the Effects of Water, Cold and Warm, as a Remedy in Fever. By James Currie, M.D., F.R.S. 1804.

² Article, "Continued Fever" (Library of Medicine, vol. i., 1840).

Weber and Wilson Fox, of London, show that, although the practice may not shorten the fever, and is often inapplicable, yet under certain circumstances it is useful not only for reducing the temperature, first of the surface and then of the interior of the body, but for relieving headache and other distressing symptoms, removing congestion of the kidneys, warding off delirium and coma, and rousing the nervous system in cases of excessive stupor. The circumstance has perhaps been too much lost sight of that cooling the body may not influence the conditions on which the development of heat depends; but with reduced heat it may be assumed that there will be diminished metamorphosis, to the non-elimination of the products of which many of the dangers of fever are due. In point of fact, Schroeder, of Dorpat, has ascertained that cold baths effect a marked diminution in the excretion of carbonic acid and urea in fever;¹ and as this was not attended by any aggravation of the general symptoms, it is fair to attribute it to a retarded metamorphosis of tissue.

"Statistics have been appealed to to prove the great success of the cold-water treatment of fever (particularly of enteric fever) as contrasted with that of an expectant method; and, although other conditions not stated may have helped to influence the result, they suffice to show that the practice is not beset with the dangers commonly imagined. But the most conclusive facts in favour of the practice are those observed in certain cases of hyperpyrexia by Dr. Wilson Fox² and others, where its employment was followed by recovery from an elevation of a temperature (110 deg. Fahr.) which, under every other method of treatment, has been speedily followed by death. At the same time there are many cases of pyrexia in which the cold affusion or immersion would be unsuitable or injurious. It is likely to be of most service when the temperature is unusually high; and in all cases the practice is contraindicated when the temperature is under 102 deg. Fahr., or when the extremities are cold, although the temperature of the central parts of the body be high; and it must always be employed with caution when there are signs of weakened cardiac action or of stagnation of blood in the capillary circulation, although it may be noted that in one of Dr. Fox's patients, who was apparently rescued from death, the face was cyanotic and the radial pulse imperceptible.

"There are different plans for employing cold water in the treatment of pyrexia, such as the cold affusion practised by Currie, packing in a cold wet sheet resorted to by Brand, or immersion in cold baths. The last is the method now most in fashion. The patient is placed in a bath having a temperature of from 50 deg. to 70 deg. Fahr., or better, as Ziemssen recommends, in one whose temperature is about 10 deg. below that of the body, but which, after the patient's immersion, is gradually cooled down to 68 deg. by adding cold water. He should remain in the bath for half an hour, or until shivering comes on, and all the time he is in the bath his limbs ought to be rubbed by assistants. He is then to be hastily dried and put in a warm bed. For some time after the bath, the temperature in the rectum continues to fall as the trunk parts with its heat to the extremities; but as soon as the temperature in the rectum rises again to 104 deg., the patient ought to have another bath. In the early stages of the fever, as many as seven or eight baths in the day may be necessary. When cold affusion or immersion is contraindicated or inexpedient, frequent sponging of the surface with cold or tepid water will also help to cool the body, and is often a source of much comfort to the patient.

"*Quinia in large doses* has an undoubted influence in lowering the temperature of pyrexia. In most cases of severe pyrexia, ten, fifteen, or twenty grains will, within an hour or two, cause a fall of the temperature to the extent of three or four degrees, and to a less degree of the pulse.³ It is true that the effect passes off after a few hours, and that there is no good evidence (except in

¹ Ueber die Einwirkung kalter Bäder auf die Co²- und Harnstoff-ausscheidung beim Typhus.—*Deutsch Archiv f. klin. Med.*, 1869, Bd. vi. s. 385.

² On the Treatment of Hyperpyrexia by means of the External Application of Cold. London, 1871.

³ For evidence on this point, see Report of a Committee (of which I was a member) of the Clinical Society.—*Trans. Clin. Soc.*, 1870, vol. iii.

malarious fevers) of its cutting short the natural course of the attack; but the effect may be maintained by a repetition of the dose; and the remedy has often appeared to me to be of signal service when a pyrexia was at its crisis, and when the temperature was rising in place of falling.

"*Digitalis*, *aconite*, and *veratrum viride* have a marked power in reducing the pulse, and, to a less extent, the temperature in pyrexia, and are, in my opinion, too much neglected for these objects in practice. *Veratrum viride* is largely used in America in the treatment of fevers, and its effect upon the pulse is speedy and most decided; the only objection to its use in private practice which my experience suggests is its liability to induce sudden nausea and faintness; but these symptoms are transient, and cease on the administration of a stimulant. Ten or fifteen minims of the tincture may be given every four or six hours. *Aconite* is a remedy of great value for reducing the pulse and temperature in fever, and especially in the pyrexia resulting from local inflammations, and is much less used than it deserves to be. *Digitalis* is another remedy which I have often found very serviceable in various forms of pyrexia. While increasing the force of the cardiac contractions, it diminishes the frequency of the pulse, reduces the temperature, and increases the flow of urine. Lastly, *antimony* reduces, in a marked degree, the frequency of the pulse in pyrexia, and promotes diaphoresis and mucous secretion. It was at one time largely used in all fevers, but in many it is contraindicated by its tendency to weaken the contracting power of the heart.

"4. The nutrition of the body must be maintained by appropriate food, in the form of milk, beef-tea, eggs, and farinaceous articles. Not long ago it was the custom to starve fevers; and you may probably have heard that the late Dr. Graves, of Dublin, who was mainly instrumental in doing away with this objectionable custom, expressed a wish that his epitaph might be, "He fed fevers." The modern tendency, however, is perhaps to overfeed fevers, and especially to give too much nitrogenous food. Dr. Parkes has shown that there are theoretical objections to a purely nitrogenous diet in fevers. It is doubtful if the disintegrating nitrogenous tissues can be fed; and in that case the albuminous food must be got rid of by the already overtasked glandular organs. Milk is, in most cases, preferable to beef-tea as an article of diet in fevers.

"In many cases of fever it will be necessary to give stimulants. You must not give stimulants simply because a patient has fever. Many patients with fever do better without them. But you must not refrain from giving stimulants when the heart shows signs of weakness, as happens in the advanced stages of most protracted fevers. The heart may be artificially stimulated by sinapisms and other irritating applications to the skin, but better by the internal administration of ammonia, ethers, and alcohol, in quantities proportioned to the weakness of the heart and pulse.

"5. In every case of pyrexia, you must combat dangerous symptoms as they arise. Stagnation of blood in the pulmonary capillaries impeding the aeration of the blood is to be met by stimulants, such as alcohol, carbonate of ammonia, and ethers. *Digitalis*, by strengthening the heart's action, and turpentine, which seems to stimulate the capillary circulation, are also useful under these circumstances; while advantage will likewise be derived from mustard- and linseed-poultices to the chest, sometimes from dry cupping of the chest, and from warm applications to the feet. When uræmic symptoms predominate, the action of the skin and bowels is to be promoted, digitalis and saline diuretics may be given to increase the flow of urine, sinapisms and linseed-poultices are to be applied over the loins; while attempts may be made to rouse the patient by cold affusion to the head, by blistering the shaven scalp with liquor ammoniæ, and by sinapisms to the nape and feet. In many cases of fever you will also be called upon to relieve distressing symptoms—such as diarrhœa, pain, sleeplessness, and delirium—which, if unchecked, hasten exhaustion and prevent recovery.

"6. You must counteract, as far as possible, secondary complications, which will vary according to the primary cause of the pyrexia, and which always add to the patient's danger.

"Lastly, I would caution you against two errors in the treatment of pyrexia.

"1. You must take care that the remedial measures which you adopt in no way thwart the natural modes of recovery, or favour the natural modes of death.

"2. At the same time, you must not be content with adopting a treatment of pure expectancy. You must not forget that the natural termination of pyrexia may be death, as well as recovery."

29. *Principles of Treatment of Rheumatism*.—Dr. RIDGE, after observing that an incipient attack of rheumatism can be cut short by diluents hot or cold, with abundant covering to the surface, or hot stimulants, or by a Turkish bath, proceeds to consider the means by which acute rheumatism can be removed. The inflammatory action, he thinks, may be either checked or diverted. Nerve-excited inflammation may be checked in two ways, by 1, directly reducing the nerve-energy; or 2, by locally diminishing the activity of tissue oxidation. By reducing the nerve-energy, he means a process quite distinct from its diminution in one form through diversion into another channel. He refers to a simple decline of its intensity. This may be effected by the continuous application of heat, or by the exhibition of certain sedatives, as opium, camphor, aconite, and most likely colchicum, although these can act powerfully in other ways. Nitrate of potash has a somewhat similar action on the nervous system, since it relaxes bloodvessels (so promoting catamenia) and increases the perspiration. Another mode of checking the process is by directly retarding the oxidation of the tissues. In this way probably the various vegetable salines act, for it is well known that in passing through the system these salts are decomposed and form carbonates of their base; in this process a large amount of oxygen is consumed. The same amount of oxygen is consumed by the complete oxidation of 2 grains of acetate of ammonia, 5 grains of acetate of potash, 7 grains of citrate of potash, 8 grains of acid tartrate of potash, 9 grains of tartrate of potash. When completely oxidized, however, most of these salts form alkaline carbonates, and alkalies promote oxidation: hence he thinks their secondary action will neutralize, or in some instances even reverse, their primary effect; and to the extent that they accomplish this they cannot but do harm. More powerful retarders of oxidation are met with in the acids, both vegetable and mineral, as the citric and sulphuric acids, and the hydrochloric in the form of perchloride of iron. But the morbid process may also be arrested by diverting the excess of energy into another channel, and this is the principle of the administration of all the diaphoretic, diuretic, counter-irritant, and derivative measures which are so largely employed. These agents either produce a change of action in the inflamed part itself, and substitute vaso-motor contraction or secretion, or they restore the normal trophic action by diverting the excess of energy to establish inflammation, organic muscular contraction, or secretion in some other part alternatively connected with it by its sympathetic nerve supply. The establishment or increase of some secretion is the method most frequently adopted, and to this end opium, camphor, ipecacuanha, tartar emetic, colchicum, guaiacum, alkalies, salines, and some purgatives are administered, besides the application locally or generally of warmth and moisture; secondly, we may promote vaso-motor action by means of quinia, digitalis, and ergot; thirdly, the use of counter-irritants is widely spread and their value unquestionable.—*Practitioner*, Dec. 1871, from *Med. Times and Gazette*, Nov. 4, 1871.

30. *Turpentine in Peritonitis*.—At a recent meeting of the Paris Hospital Medical Society M. VIDAL took occasion to call the attention of his colleagues to the great value of turpentine as an external application in partial and general, and even in puerpeal peritonitis. Trousseau, originally importing this remedy from England, employed it in large doses internally. In peritonitis, M. Vidal soaks a piece of flannel thoroughly in the turpentine, and, having applied it over a large portion of the abdomen, covers it with gummed silk. It remains on until vesication is produced at several points, when the silk is removed in order to allow of the evaporation of the turpentine. Under this application he has in many instances seen patients, who were very far gone, rally completely and recover. M. Bourdon inquired whether this application of turpentine had

been employed in any cases from the commencement, and whether leeches, cataplasms, &c., had been also resorted to. In this case the turpentine would have acted just like an ordinary blister, and it is well known that in advanced peritonitis advantage is sometimes derived from resorting to blisters and Todd's mixture. He also suggested that the turpentine might act in the same way as the castor-oil collodion employed by M. R. Latour, by preventing transpiration and the contact of air. M. Vidal believes, however, that turpentine does not act in this way, but as an energetic and diffused revulsive, while at the same time it undergoes absorption by the skin and respiratory organs. At first he did not employ it so exclusively in peritonitis as he now does, as he then used to apply also leeches. Now he resorts without hesitation to the turpentine at once. He generally combines with it the application of ice, or what might be termed compression by means of ice, and under certain circumstances he would still use leeches. M. Moutard-Martin, believing the action of the turpentine to be solely topical, asked whether comparative trials of it and of blisters had been made; but M. Vidal is convinced that it also acts internally. That it is speedily absorbed is shown by the odour of the urine; while, soon after its application, the patients seem as if a cordial had been administered to them, and their cyanosed lips soon recover their colour.—*Med. Times and Gazette*, Feb. 24, 1872.

31. *Use of the Bromide of Potassium in Epilepsy.*—Dr. JULES FALRET gives the results of his treatment at Bicêtre during the years 1867–70, where he treated, almost invariably, confirmed cases where the disease was of long standing. He begins by giving 15 grains a day, very gradually increased until the dose of one drachm is reached. This usually diminishes the number of attacks, and is then persisted with; if not, the quantity is again increased, every week or fortnight, until eight scruples, or two drachms, are taken daily. If considerable improvement results, and if no bad consequences are observed, this dose is continued for one or two years, and then gradually brought down to the original dose of 15 grains. He attaches great importance to the slowness with which the dose is increased and diminished; and ascribes most failures to suddenly leaving off the medicine. By this treatment he states that he has cured one-seventh of his cases, greatly improved three-sevenths, and failed with the remainder. Attacks of maniacal violence proved most amenable to treatment; next in order came nocturnal fits, then diurnal; vertigo and the “petit mal” being most difficult of cure, these last sometimes taking the place of ordinary fits under treatment. An acneiform eruption on the face, shoulders, and back is generally observed as soon as the daily dose of one drachm is reached; when it is not produced, M. Falret usually finds that the bromide does no good—it sometimes becomes so annoying as to prevent treatment being continued. Considerable loss of mental power and other cerebral symptoms, of course, indicate an immediate suspension of the remedy. They seem to M. Falret more frequent in private practice than at Bicêtre. One patient died very suddenly, while taking only moderate doses of the bromide; the author analyzed the viscera, and found considerable accumulation of the salt in the brain and liver.

This paper was read before the Société Médico-Psychologique, and gave rise to two very interesting discussions, of which only the most salient points can be given here.

M. Morel looked upon the doses given as “fearful;” he has himself rarely given more than two scruples or one drachm daily.

M. Legrand du Saulle, on the contrary, stated that he saw no danger in such large doses, provided they were only arrived at very slowly: his full dose is two drachms and a half daily, which he only attains after several months' treatment. With this precaution, he has never seen any evil results, not even emaciation. He believes, however, that such large doses are only needed for men, and that women are sufficiently acted upon by half a drachm to one drachm daily. He has treated 138 cases in all, cured 10 of these, greatly improved 19, improved 45, and failed in 64. He prefers the bromide of sodium for chorea, hysteria, hemicrania, and the early stages of melancholia; and the bromide of ammonium

in all forms of cerebral congestion; he has seen it relieve symptoms of this kind in general paralysis with great rapidity.

M. Voison, who was the originator of this graduated method of administering the bromide, read a long critique upon M. J. Falret's paper. Besides acne simplex and indurata, he has observed another eruption of specific character in persons taking the salt. This consists of patches of confluent acne pustules, generally on the calves of the legs, which end by producing adherent scabs, and sometimes ulcers difficult to heal. He shows, by figures, that the occurrence of skin eruptions is no evidence of a favourable action of the remedy, which he looks for in some sign that it is acting on the medulla oblongata. This he finds by titillating the pharynx, nares, and epiglottis, and observing whether the reflex acts of nausea, sneezing, and coughing are produced. As soon as they cease, he considers the medicine to be producing its physiological action, and, therefore, to be acting beneficially upon the disease. He dwelt at some length on the various phenomena of bromism (among which he has once seen acute mania), and urged that no patient should be allowed to take more than one drachm of the bromide daily, without being frequently examined by his physician. Of 41 cases (generally of confirmed epilepsy) treated by M. Voison, 17 have had no attack for five years, 20 are improved, and 4 remain in the same state. No one seems to have questioned the efficacy of the bromide during these two meetings, but, since then, M. Delasiauve and a few men of less note have expressed doubts as to its curative action in confirmed epilepsy, and have seen increased violence of attacks follow its suspension. What would they have said had they known that Binz and other Germans totally deny that the bromides have any different action from the chlorides of the same bases?—*Edin. Med. Journ.*, Feb. 1872, from *Journ. Mental Science*, Jan. 1872.

32. *Intracranial Disease cured by Iodide of Potassium*.—Dr. G. OWEN REES related to the Clinical Society of London, November 24, 1871, the following case: A young man, aged 21, was admitted into Guy's Hospital, under Dr. Moxon's care, having been ill six months. The illness came on with severe headache; in about three months, ptosis and ocular paralysis of the left side commenced, and, as it went on, the left fifth nerve also became involved, and the right hand grew partially numb. When admitted, the patient had agonizing pain in the head. The left eye was intensely red, and its cornea ulcerated; it was almost immovable, and the lid was dropped. He could not feel moderate touches on the left side of the face, nor taste salt on the left side of the tongue, nor use the left masticating muscles. He had two slight seizures of a doubtful kind on the first two days after admission. Iodide of potassium was given in three-grain doses thrice daily, and the dose increased to a scruple. The pain left him very soon, the other symptoms more gradually. He was in attendance at the Society's rooms, and the state of the left side of his face and of his left eye was practically normal again. This was the third case of syphilitic disease about the sella turcica Dr. Moxon had met with. This he connected with the growth of the sphenoidal sinuses there, bringing in illustration the occurrence of exostoses very frequently about the frontal sinuses and of exostoses on the long bones at the region of the epiphyseal cartilages; all these facts going to prove that the seats of late development were usually liable to disease. Dr. Moxon believed it was incumbent on every one who had a case of local intracranial disease under his care, to treat it at once with iodide of potassium, without waiting to make out its nature. He had not seen any serious ill effects from the iodide when taken to the extent of a drachm in a day for long periods. Slight salivation, a red rash, and catarrh were not common, though they occasionally occurred; and they were by no means to be compared with local intracranial disease as alternatives. As to absorption of the testes, he had never seen it. The iodism of old authors was probably to be referred to the poisoning of the blood by the absorption into it of broken-down matter of goitres during their cure.—*Brit. Med. Journ.*, Dec. 9, 1871.

33. *Therapeutic Value of the Hypodermic Injection of Ergotine in Hæmoptysis*.—Dr. CURRIE RITCHIE, of Manchester, has recently employed this treat-

ment in nine cases of hæmoptysis. **CASE 1.**—A. B., aged 22, spat florid blood in June last, after a long walk, in considerable quantity. From that time till September had more or less cough, with occasional streaks of blood in sputa, menstruation regular, was then seized, after dancing, with severe hæmoptysis, lasting from 2 A.M. till 11 A.M., when Dr. Ritchie found her anæmic, with a troublesome cough, and expectorating mouthfuls of blood. Five grains of ergotine dissolved in water were injected into the left arm, and perfect rest in bed enjoined. No expectoration of blood took place after the injection, and two months afterwards she was apparently in perfect health. **CASE 2.**—W. S., aged 30, had mitral regurgitation, with consolidation of apex of left lung. Dr. Ritchie found him, at 2 A.M. of 20th September, labouring under profuse pulmonary hemorrhage, which had already lasted one hour. In Dr. Ritchie's presence he expectorated two ounces of florid blood. Five grains of ergotine dissolved in water were injected subcutaneously, the hemorrhage was at once arrested, and did not return. **CASE 3.**—A man, aged 26, had purulent expectoration for more than two years, with occasional streaks of blood. On the 26th September came to Dr. R. labouring under severe hæmoptysis, which had lasted for two days continuously, in spite of medical treatment; according to his own account, he had spat up several pints of blood. His face was blanched, and the mucous lining of his lips and cheeks very pale. Five grains of ergotine dissolved in water were injected subcutaneously; not a single bloody sputum followed the injection till the 28th, when a repetition of the injection was followed by a similar abrupt cessation of the hæmoptysis, which, however, recurred on the night of the 29th, probably owing to domestic inquietude from his wife insisting on carrying him off to Ireland. **CASE 4.**—F. B., aged 62, had suffered from slight hæmoptysis for several days. Five grains of ergotine in watery solution were injected. At the end of two days the hemorrhage continued as before; a repetition of the injection was followed by complete cessation of the hæmoptysis, only one or two small dark-brown coagula following the second injection. **CASE 5.**—A. F., aged 17, had a cavity the size of an orange in the apex of her left lung when first seen, and shortly afterwards was attacked by severe hæmoptysis. Five grains of ergotine in watery solution were injected, and only one single bloody sputum followed the injection. No return of the hemorrhage had taken place a month after when last seen. **CASE 6.**—J. C., aged 22, spat blood in May last for two or three days, and again a fortnight later. She remained in fair health till 11th October, when hæmoptysis again occurred to the extent of "nearly a quart of bright red blood" before Dr. R. saw her. Five grains of ergotine in watery solution were injected, and no more blood was expectorated till the 15th, when, after a severe fit of coughing, a streak of blood was detected on three several occasions in the sputum. In this case the injection produced a good deal of pain and induration round the seat of puncture, lasting till the 19th of October. **CASE 7.**—K. M., aged 19, had slight hæmoptysis for several days; a few hours before being seen had spat up several mouthfuls of pure blood. Five grains of ergotine in watery solution were injected subcutaneously, only one bloody sputum followed, and a fortnight later there had been no return of the bleeding. **CASE 8.**—J. W., aged 28, caught cold in March last, and continued to expectorate phlegm for two or three months; he then caught a fresh cold, and ever since his sputa have been streaked with blood. The sputa are tenacious, not frothy; expectorates most blood when at work, but feels easier there. Five grains of ergotine in watery solution injected on 1st November. Expectoration of blood took place once on 1st November, and once on the morning of the 2d; but, in the afternoon of the 2d, it became considerably increased, and continued till the 6th. So much irritation had been produced by the injection, that Dr. R. did not repeat it till the morning of the 7th, when three grains of ergotine were injected, dissolved in equal parts of glycerine and spirits of wine. There had been no return of the hæmoptysis on the 14th when last seen, and no trace of irritation from the second injection. **CASE 9.**—Mrs. D., aged 60, under Dr. Bowman's care. On the 19th October had been spitting blood continuously for two days, except for about six hours, when there was almost complete cessation. At 3 P.M. on the 19th hæmoptysis recommenced, and she was ordered

ten-minum doses of the liquor ergotæ every two hours, without effect. At 9 P.M. she was expectorating blood profusely, an incessant hacking cough compelling her to do so every few seconds. At Dr. R.'s suggestion, Dr. Bowman injected five grains of ergotine dissolved in water, after which there was absolutely no hæmoptysis, and when last seen, on the 26th October, she was apparently quite well.—*Edin. Med. Journ.*, Feb. 1872, from *Practitioner*, Dec. 1871.

34. *Alkaline Sulphites in Marsh Fevers*.—M. POLLI contributes a paper on this subject to the *Journal de Médecine* in which he states that his experiments on the alkaline sulphites have extended over seven years and have always been compared with quinia, and that he has arrived at the following results: 1. That marsh fever can be cured by the sulphites alone. 2. That the action of the sulphites is less rapid on the attack of the fever than the sulphate of quinia; they do not stop so suddenly the periodical course of the fever, but they usually gradually diminish the violence of the symptoms, till they disappear altogether. 3. That the sulphites, *en revanche*, act much more certainly in preventing the return of the fever than quinia. Amongst 403 cases treated by the sulphites relapses only occurred in 5.7 per cent., whilst in 183 cases treated with sulphate of quinia the relapses amounted to 44.5 per cent. 4. That many cases of miasmatic fever, long rebellious under treatment by quinia, were cured by the sulphites alone. 5. That the sulphites can be employed with success even as a prophylactic means, and that they may be thus used for long periods without danger, which is not the case with the preparations of quinia. 6. That the sulphites can be administered without danger in spite of concomitant gastro-intestinal irritation and during the attack, and finally that many sequelæ of fever (excepting always anæmia) may be very advantageously treated with the sulphites. Since the sulphites have cured marsh fevers as well and perfectly as quinia, and have been found even still more serviceable than quinia in yellow fever, it has been suggested that the febrifuge action of quinia may be due to an anti-putrefactive action analogous to that which the sulphites exert on putrefying substances, and this view has been maintained and confirmed by M. Pavesi and M. Binz. It is not surprising now that carbolic acid, creasote, &c. have been used in similar cases with good effects. Arsenic perhaps acts in the same manner. The *curative* treatment adopted by M. Polli is given in the following prescriptions. If sulphite of soda be used, the proportion is 20 grammes of the salt in 200 of water, sweetened with honey or some aromatic syrup. This quantity is given in the course of twenty-four hours in divided doses. When the sulphite of magnesia is prescribed, he gives 12 grammes in the same quantity of water, taken in four or six doses; when the hyposulphite of soda, 15 grammes in 300 of water, taken in a similar manner. It is essential to take the remedy one hour before or two hours after a meal, and not to drink, except after a long interval, any acid substance, such as lemonade, or to take acid fruits or vinegar.

The *prophylactic* treatment.—For this purpose he prescribes 6 grammes of sulphite of magnesia, or 10 grammes of sulphite of soda, or 8 grammes of the hyposulphite of soda, in two doses, dissolved in water, morning and evening, and considers this sufficient to preserve an adult during the season favourable for endemic disease. This dose can be taken without inconvenience for several months together. M. Polli does not employ either the sulphite of potash or the sulphite of lime, the first having a disagreeable flavour and a too debilitating action; the latter being but little soluble and having also a disagreeable flavour. The hyposulphite of lime may, however, be administered, and is very useful in certain phases of tuberculous phthisis.—*The Practitioner*, Dec. 1871, from *Journal de Méd., du Chir., et de Pharmacol.*, Oct. 1871.

35. *Phosphorus in Skin Diseases*.—Dr. EAMES communicated to the Medical Society of the College of Physicians, Ireland, a paper on this subject. It commenced with a brief review of the observations of Burgess, Broadbent, and Tilbury Fox on the employment of phosphorus as a substitute for arsenic in the treatment of many cases. Dr. Eames described his method of using the remedy. A solution of ten grains of phosphorus in one ounce of olive

oil was prepared, and of this a dose of from five to ten minims was administered three times a day; or capsules might be substituted in cases where the oily solution caused nausea or other unpleasant symptoms. Three sets of capsules, containing one-tenth, one-twentieth, and one-thirtieth of a grain of phosphorus respectively, had been made. The first case treated by Dr. Eames with the remedy was one of severe *acne indurata* of the face, of four years' standing. After six weeks, a cure was effected. In three cases of lupus, similar satisfactory results were obtained. In the first of these, a marked improvement was observed after a fortnight's trial, and the patient continued to take ten-minim doses of the phosphoretted oil for nine months. In the second instance, a five months' course of treatment was followed by cicatrization, and, eighteen months subsequently, there had been no return of the disease. In the third case, the oil was used during nine weeks, but with interruptions, owing to the appearance of grave dyspeptic symptoms. In one case of scrofuloderma, the glandular swellings disappeared in six weeks; in another, a cure was effected in three weeks. Psoriasis also yielded readily. In one instance of this affection, dyspepsia supervened on the administration of phosphorus, which was then temporarily stopped and the mineral acids given. A man, aged 24, with pemphigus, beginning on the abdomen, was quite well in a month. Cases of eczema of the scalp had also been much relieved. Dr. Eames referred to the silvery appearance of the tongue noticed when patients had been taking phosphorus for some time—another point of analogy with arsenic, and to the frequent occurrence of dyspepsia. The latter was to be met by the substitution of the mineral acids for a short time.—*Brit. Med. Journ.*, Dec. 9, 1871.

36. *Treatment of Smallpox by Carbolic Acid.*—Dr. A. LÖFFLER, of Stockenau, states, in the *Wiener Med. Wochenschrift* of February 10th, that he has treated more than forty cases of smallpox by the external copious application, by means of cotton-wool, of a solution of one part of carbolic acid in twelve of oil. The result in all the cases was, that the cutaneous swelling soon diminished; and that, when the application was made early, the course of the disease, in relation to the number of pustules, was milder. He believes also that by this treatment the danger of infection was greatly diminished. Unvaccinated children, inhabiting the same rooms with smallpox patients, either remained free from the disease, or had it in a very mild form. Carbolic acid was also diffused through the atmosphere of the sick-rooms.—*Brit. Med. Journ.*, February 17, 1872.

37. *Warm Bath in Smallpox.*—In some notes on the treatment of smallpox in the *Dublin Journal of Medical Science* for January, Dr. STOKES, Regius Professor of Physic in the University of Dublin, lays great stress upon the use of the warm bath. He says: "We cannot doubt that the mortality in smallpox hospitals would be greatly diminished by the use of the bath." He describes a case in which the pustulation was almost universally confluent; the purulent matter highly putrescent; the hemorrhagic state developed; the body one universal ulcerous sore, and the blackness of the worst purpura developed; the odour of an intensely pungent and offensive character, which seemed to pass through the bystander like a sword. "Stimulants alone, freely and constantly employed, seemed to preserve the patient alive. The pulse was rapid, weak, and intermitting; and for several days we despaired of his life. At this juncture I happened to describe the case to my colleague, Mr. Smyly, who suggested the trial of the warm bath, with the view of relieving the terrible suffering. A bath in which he could recline was speedily procured; and, pillows being adjusted in it, we lifted the sufferer in, and placed him in the recumbent position. The effect was instantaneous and marvellous. The delirium ceased as if by magic; it was the delirium of pain, and the patient exclaimed, 'Thank God! thank God! I am in Heaven! I am in Heaven! Why didn't you do this before?' The fetor immediately and completely disappeared, so that, on entering the ward, no one could suppose that there was a case of smallpox in it. He was kept at least seven hours in the bath, during which time brandy was freely administered, and omitted only when it showed symptoms of disagreeing with the brain. He was then removed to bed. The surface was

clean, and in many places the sores looked healthy and white. The bath was repeated next day, after which he fell, for the first time, into a tranquil slumber. From this time his recovery was progressive, delayed only by the formation of abscesses and the great soreness of the feet. That this gentleman's life would have been sacrificed but for the timely use of the bath, few who have had any experience in prognosis can reasonably doubt. He was in the condition of a patient every portion of whose skin had been burnt and ulcerated.... This case and its singular result, in addition to the experience of Hebra, justifies the recommendation of the use of the bath. No danger attends its employment; and, in asthenic cases, stimulants can be freely used. In the Vienna Hospital, patients have been kept continuously in the bath for one hundred hours with good effect."—*Brit. Med. Journ.*, February 17, 1872.

38. *Death from a Second Attack of Smallpox.*—REUSS relates, in the *General Report of Vaccinations performed during the year 1869* (*Wurtemb. Med. Correspond. Blatt.*, 1871, No. 28, quoted in the 54th No., Dec. 30, 1871, of the *Centralblatt f. d. Med. Wissenschaften*), the case of a man 53 years of age, upon whose body were the unmistakable cicatrices resulting from a preceding attack of smallpox, who was attacked a second time with variola, terminating in death. In the accounts on record of cases where the individual experiences a second attack of smallpox, this latter, according to Dr. R., is always attended with increased danger. The correctness of which remark our own experience corroborates.

D. F. C.

39. *Revaccination.*—Dr. THEOPOLD (*Deutsche Klinik*, 1871, No. 38), a physician of Blomberg, of 30 years' standing, has had the opportunity of studying the circumstances connected with all the cases of variola and varioloid that have appeared in his vicinity during his term of professional service. He has, in very many instances, found the vesicles produced in cases of revaccination to be as full and perfect as in those following primary vaccination, and the lymph from them, when inserted in the arm, to furnish as complete protection from variolous infection. He suggests, therefore, that the lymph from a successfully revaccinated subject will furnish a valuable source of supply in case of the failure or scarcity of vaccine lymph from ordinary sources. In proof of the prophylactic efficiency of such lymph, the experience of the German army physicians is cited.

[There can be no doubt that in an extended series of revaccinations, in some cases, genuine vesicles, filled with effective lymph, may be met with; but the real question that presents itself, considering the great difference in point of infection which must exist necessarily in different cases of revaccination, is, will lymph thus obtained be safe to trust to for the protection of the system against the occurrence of smallpox? We should certainly answer, with Müller of Berlin, and with the mass of experienced vaccinators everywhere, in the negative.]

D. F. C.

Dr. BEATTY stated at the meeting of the Medical Society of the College of Physicians (Jan. 17, 1872), that he had been very extensively revaccinating for the last couple of months. "Many of these were persons whom I had vaccinated in their youth, for I have lived long enough to see another generation spring up under my care. And I have been surprised at the way in which persons—generally boys and men whom I had vaccinated, and who bore most splendid marks, specimens that they would take to their graves of successful vaccination—have taken revaccination, and at the vesicles, perfect as those you would see on an infant, that have formed on their arms. In many cases of adults, aged from twenty to thirty, I have seen the most perfect vesicles formed; and in the cases of younger persons the vesicles have been so beautiful as to deserve to be drawn as specimens of the disease. I have revaccinated freely whenever I have been asked to do so, and I never saw a single instance of a bad result from revaccination. I have seen what are called sore arms, particularly on persons aged from twenty-five to thirty and thirty-five, where the vesicles did not form as well as in other cases; and a sort of spurious inflammation, or extension of inflammation round the wound, but nothing

of the slightest importance, or that a wet rag did not put an end to it in a couple of days. But I never saw a single bad result arising from revaccination. And the grand point is that of giving confidence to the individual, when you can at so little expense satisfy his mind and, moreover, satisfy your own mind; because if you refuse to vaccinate a person who asks you to do it, and that person subsequently gets smallpox, I need not tell you what you will get."

40. *Glycerine-Lymph for Vaccination and Revaccination.*—Dr. WEISS had ample opportunity of testing the convenience and value, indeed, the indispensability almost, of the solution of vaccine lymph in glycerine, when a large number of persons were to be vaccinated or revaccinated with as little delay as possible, in the hospital under his charge, during a variolous epidemic which prevailed among the prisoners of war captured during the late Franco-German contest, and he bears unqualified testimony in its favour. In six cases where glycerin-lymph was ineffectually employed, the operation was subsequently repeated with unmixed, pure lymph from the vesicle, and equally without effect. The entire number revaccinated by Dr. W. was 5801. Of these, in 1586 cases, the operation was successful; thus, by revaccination were extinguished just that many foci which would otherwise have contributed to the further spread of the epidemic. Previously to the revaccinations being accomplished, the disease was continually on the increase, while subsequently, new cases quickly ceased to occur.—*Centralblatt f. d. Med. Wissenschaften*, 1871, No. 48, from *Eulenberg's Vierteljahr. f. Gericht. Med.* N. F. XV. D. F. C.

41. *On the Use of Pepsine Wine in the Artificial Feeding of Infants.*—Dr. W. JACKSON CUMMINS made an interesting communication on this subject to the Cork Pathological and Medico-Chirurgical Society. The value of pepsine, he remarked, in those forms of dyspepsia attended by a deficient secretion of gastric juice, is so well known and generally understood, that it is unnecessary for me to trespass on the time of the Society by more than an allusion to them. In the diseases of children, however, and especially as a substitute for a wet-nurse, when a mother is unable or unwilling to suckle her own child, the benefit of this valuable aid to digestion is not, I believe, as generally known, although allusions to it are to be found in medical essays. * * *

There is nothing of course like a good breast of milk for an infant, if it can be had; and in the "good old times," when the peasantry and small farmers lived on potatoes and milk, without stimulating their nerves with strong tea, nor their brains with penny-a-liner's novels, there was an ample field for the selection of a foster parent, but now even when that *rara avis*, a good nurse, is procured, she is so independent and knows her power so well, that any caprice must be humoured, and she is always ready to throw up her situation or neglect her charge.

A wet-nurse is, then, an admitted torment, and a balance struck between its advantage and disadvantage is generally against the former.

Artificial feeding by bottle is a great improvement upon the old system of spoon feeding, as the act of sucking stimulates the salivary glands and insures due insalivation, which is an important part of infantile digestion. With such an aid the stomach of most human infants is vigorous enough to fall into the way of digesting cow's milk, properly diluted, and mixed with sugar and cream to assimilate the proportion of its constituents to human milk—but besides the relative excess of casein and albumen contained in cow's milk when compared with human, the coagulum of the latter is "soft, flocculent, and not so thoroughly separated from the other elements of the fluid as the firm, hard curd of cows' milk is from the whey in which it floats."—(West.)

And when we reflect that the digestive organs of the human infant are found to digest human milk, and the force of its gastric juice proportioned to the solution of its soft flocculent coagulum, we can understand why the solvent power of its gastric juice is sometimes unequal to redigesting the firm curd of cow's milk. When such is the case, acetous fermentation is quickly set up, offensive gases distend the stomach and taint the breath, vomiting and diar-

rhœa set in, and in process of time the little patient sinks into a miserable state of marasmus, and dies.

The remedy for this state of things is simple, for although we cannot change the elementary composition of the milk we have to use, we can introduce into the infant's stomach a digestive power proportioned to the food it has to use—the organic principle of digestion taken from the stomach of the calf.

It is now many years since I first applied this simple theory to practice in the case of one of my own children, who, when about three or four months old, was reduced to a condition of marasmus by vomiting and diarrhœa, due to imperfect digestion of cow's milk. I ordered him fifteen or twenty drops of pepsine wine, to be given immediately before or after each meal. Soon after commencing it he began to improve, and by degrees all bad symptoms vanished, and nutrition was quite restored. The pepsine was continued until he was nearly two years old, and he thrived at least as well as if he had been wet-nursed; other treatment of course preceded and accompanied the use of pepsine, but it was not until the latter was commenced that improvement took place.

Shortly after a child, born in England, and bottle-fed, was brought over to this country when about six months old; he also was suffering from infantile dyspepsia, and was pining away in a listless, apathetic state, quite indifferent to surrounding objects, and appearing as if he would lapse into idiocy from malnutrition of the nervous centres.

I immediately ordered him pepsine wine, which produced such beneficial effects that after it had been continued about twelve months, he had become a bright, intelligent, well-nourished child.

Since then I have never recommended a wet-nurse, and have used pepsine wine largely in dispensary, hospital, and private practice, and have seen many apparently hopeless cases recover under its use.—*Dub. Journ. Med. Sci.*, Feb. 1872.

42. *Strychnia for the Relief of Obstinate Vomiting*.—M. DEBAUGE observes that, although nux vomica and strychnia have been employed in the treatment of various affections of the digestive organs, he is not aware of any account of strychnia being used for the relief of obstinate vomiting occurring in hysteria, pregnancy, suppressed menses, and disease of the uterus. This form of vomiting is dependent for the most part on asthenia, and occurs in debilitated subjects; and sometimes, after resisting all sedative remedies, it is arrested by the impression made on the gastric mucous membrane by stimulant drinks. In obstinate cases, however, these do not suffice, and then strychnia becomes a valuable remedy, and may be to this end administered endermically and hypodermically.—*Med. Times and Gaz.*, Feb. 17, 1872, from *Lyon Médicale*, Jan. 7, 1872.

43. *Stimulating Hypodermic Injections*.—Some German journals have recently reported several interesting observations on the therapeutic value of stimulating hypodermic injections in different diseases of an asthenic type, and more especially in the typhoid fever, which prevailed in the Prussian army during the last campaign in France. Dr. ZUELZER has used with much advantage a new curative method in these maladies, viz., an hypodermic injection of six to eight drops of alcohol or liq. ammoniæ. By this method Dr. Zuelzer ascertained that the pulse from being small and irregular became quickly full and strong, that the cardiac contractions, at first weak and feeble, became regular, energetic, and visible to the eye, and, in fine, that the cyanosis and collapse quite disappeared. The small abscesses which sometimes form in consequence of the irritating nature of the injection are, it is stated, of no importance, as in the greater number of cases they are spontaneously resolved.—*Dub. Journ. Med. Sci.*, Feb. 1872, from *Lo Sperimentale*, July.

44. *A Scarlet Efflorescence on the Skin produced by the External Application of Belladonna*.—Dr. J. G. WILSON records (*Glasgow Med. Journ.*, Feb. 1872) two cases of this. It has long been well known that belladonna administered internally will produce sometimes a scarlet rash on the skin, and we do

not remember to have heard of its external application being followed by such a result. Dr. W. says he has for several years past frequently and freely applied belladonna externally as an anti-lactescent, both in hospital and private practice. These two cases are the only instances in which he has observed any scarlatinoid rash result from its employment. In both these cases the eruption was extensive, and it was accompanied with redness of the fauces and dilated pupils.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

45. *Science and Art of Healing of Wounds*.—Dr. B. W. RICHARDSON read a paper on this subject before the Medical Society of London, January 29, 1872. He sketched the different methods at present adopted in the treatment of wounds, and the anomalies presented in the practice; dwelling first on the treatment of simple, and afterwards of complicated, wounds. In approaching the question of revision of this subject, the author held that it was necessary, first, to exclude all extrinsic or imaginary attempts at cure; and secondly, to avoid trusting blindly to what was called the *vis medicatrix naturee*. Nature always pursued her own course, without respect to ease or pain, life or death. After this, Dr. Richardson illustrated from clinical observation the results of healing in extreme cases by the first intention; and inquired why, if in one case of the extreme kind there could be cure by the first intention, there should not be such cure in the majority of cases; why, in short, success by this method of cure should be the exception instead of the rule. Two sets of causes stood in the way: one remediable, the other irremediable. The remediable obstacles to recovery by the first intention were: want of care in bringing divided surfaces into perfect apposition; the too free use of water in dressing; the too prolonged exposure of wounds to the air; too much manipulation of the surface of the wound; the leaving of long ligatures within the wound; the imperfect closure of wounds from the air; the too hasty removal of dressings; and, most important of all, error of judgment on the part of the dresser in respect to the question whether there be, in the case to be treated, sufficient continuity of surface to warrant the attempt to heal by the first intention. The irremediable causes preventing healing by the first intention were: nervous lesions, influencing the vascular supply of the injured part; the accidental introduction of decomposing or other foreign matter; or the generation of organic poisonous products within the body. For the promotion of healing by the first intention, the author contended that the dressing employed should have four distinct qualities; it should be colloidal, elastic, impermeable to air, and styptic. He had himself introduced a fluid possessing these properties under the name of "styptic colloid," and it answered well; but he had no prejudice in respect to it specially, the principle on which it was constructed being conceded. Healing by the second intention formed the next part of Dr. Richardson's communication. Here again the rules named in relation to healing by the first intention were considered, and it was maintained that the same colloidal dressing was as effective in curing by the secondary as by the primary process, the difference of application being that the whole of the exposed surface was to be treated with the colloidal fluid. After giving a series of cases of rapid healing by the second intention, in some of which bone had been exposed and even joints laid open, and after touching briefly on the addition of iodine to colloidal solution in some particular cases, the author placed before the Society a summary of his arguments; and concluded by remarking that, if medical men could become unanimous in respect to the current progress of medical science and art; if in this simple matter of treating wounds, for instance, they could be of one mind, they would strengthen their bases of operation, clear up as they went on, and would go on more connectedly, noiselessly, and powerfully, towards new and certain conquest.—*British Medical Journal*, February 24, 1872.

46. *Sulphurous Acid Lotion in the Treatment of Contused Wounds.*—Dr. JOHN BALFOUR states that an extended experience has given him great faith in this application. It gives almost instant relief from pain, controls and greatly restrains suppurative action, and, where possible, secures primary union perhaps as efficiently as carbolic acid. The lotion is of the strength of one in twelve; a thin rag (the thinner the better) should be laid over the wound, and kept constantly wet for the first thirty-six to forty-eight hours. When cold becomes less agreeable, the lotion is used tepid, the rag being wetted every twelve hours and covered with gutta-percha. Where primary union is taking place, about the third or fourth day, a dressing of zinc ointment is to be substituted for the washing: this allows the skin to heal. When suppuration is established, a zinc lotion may be used after a week or ten days, and the cure wrought out on ordinary principles. Dr. Balfour records the following, amongst other cases: S. B., a lad between eleven and twelve years of age, on the 8th of June, in company with some other boys, was amusing himself with gunpowder; a "peege" (or devil) hung fire, and he poured some powder on it from the flask. This of course exploded, and tore open the metacarpal space between the thumb and forefinger of the right hand. The metacarpal bone of the thumb was fractured, and both wrists scorched. A mass of the short flexors of the thumb was forced out of the wound, contused, torn, and blackened. As this muscular substance was much injured and could not be returned without using undue force, a good deal of it was cut off; the wound was washed out with the sulphurous acid lotion, covered with a rag wet with the same, and the fracture was kept in position by tying the thumb to the forefinger. Had a fair night's rest; the wrists (not complained of yesterday) now painful and beginning to vesicate; dressed with carbolic acid and oil. Everything went on well, the burns on the wrists healed kindly, suppuration was most moderate, cicatrization rapid and perfect. Dr. Balfour lately passed the boy into a public work, with a thumb very little, if at all, the worse for the accident.—*Practitioner*, Dec. 1871, from *Edin. Med. and Surg. Journ.*, Nov. 1871.

47. *Topical application of Cabbage Leaves to Wounds and Ulcers.*—Dr. BLANC extols (*Revue de Thérap.*, 15 Jan. 1872) the utility of cabbage leaves as a dressing for wounds, obstinate ulcers, etc. The leaves should be deprived of their nervures, then applied with bandages, and the dressing repeated night and morning. He reports cases of wounds of various kinds, and obstinate ulcers, which were promptly cured by this application. He asserts that wounds of the most unfavourable appearance and giving off sanious discharges, promptly took on a healthy action and assumed a healthier aspect.

48. *The Subcutaneous Injection of Morphia in Traumatic Erysipelas.*—Prof. ESTLANDER, of Helsingfors, states (*Deutsche Klinik*, No. 39) that he employed this injection originally in his clinical practice, in combination with the so-called abortive treatment (chiefly by means of tincture of iodine), mainly with the view of relieving the heat, tension, and pain of the inflamed skin. It was soon found, however, that the morphia must have exerted other effects also, so quickly was the course of the disease mitigated. It was therefore used in a series of cases as the sole local remedy, and the conviction became established that it must have exerted a direct influence on the inflammatory process, diminishing its intensity, and arresting its progress. When the limits between the inflamed and healthy portions of the skin are not very clearly defined, and the process manifests itself in the form of large red spots gradually approaching each other, if we inject near the affected parts, we usually find next day that the erysipelas has not extended farther, or has done so only to an insignificant extent. In cases in which the limits of the reddened and swollen skin are well marked, if we make some injections in its vicinity, we may find that the inflammatory process, which during the preceding twenty-four hours had made considerable progress, is sometimes at once arrested, but more frequently it continues in a diminished degree, gradually yielding in the course of a few days to a continuation of the treatment.

In the worst cases of erysipelas ambulans, as in the severe epidemic form, or

where a peculiar disposition of the individual prevails, the morphia exerts as little effect as any other of the so-termed abortive remedies. In estimating how far the results depend upon the peculiar nature of the erysipelas itself, and how much they are ascribable to the injections, Professor Estlander has undertaken many comparative trials, and he could relate many cases in which, while a rapid improvement followed the use of morphia, other cases treated at the same time, either expectantly or by means of other remedies, were much slower in their progress. Still, he is too well aware of the capricious character of erysipelas to venture to deliver any categorical judgment upon the subject. But a five-years experience has convinced him that these injections constitute a better mode of treating erysipelas than many other means.

For the injections, two grains of the chlorate or acetate of morphia are dissolved in a drachm of water; and as Luer's syringe holds about a quarter of a drachm, of which a quarter or a half is injected, it follows that the dose varies from one-eighth to one-quarter of a grain. As, so far from the erysipelas ever appearing at the small puncture-wounds, these and their immediate vicinity are always respected by it, the dose may be distributed over different parts of the healthy skin, at a distance of one or two inches from the limits of the inflammation. Usually the injection is made only once in the twenty-four hours.

Professor Estlander has no intention of proposing this as an exclusive method of treating erysipelas, believing, on the contrary, that one of its advantages is that it admits of the simultaneous use of other means. He has tried, indeed, all the various other remedies which have been recommended, and regards the tincture of iodine as the best of these. As soon as from shivering and the appearance of the wound erysipelas seems threatening, he administers an emetic, a means which he believes is now-a-days too much neglected, and one which he believes conduces to moderation of the disease. The morphia is next injected, either as the sole means or in conjunction with a daily painting with iodine, employing afterwards wadding and compression by a roller where practicable. Ipecacuanha with phosphoric or sulphuric acid may afterwards be administered. The sesquichloride of iron, once regarded as a specific, is of no real utility.—*Med. Times and Gaz.*, Dec. 9, 1871.

49. *Abortive Treatment of Erysipelas by the Application of Silicate of Potash.*—Dr. PIAZZA extols the efficacy of silicate of potash in the cure of erysipelas. He applies two or three layers of the article on the affected parts, even when phlyctenæ are present. He treated by this plan an intense primary erysipelas of the face in a female, who was able to leave the hospital in four days, and during the whole treatment was able to nurse her infant. Dr. FIGGIOLI has also rapidly and perfectly cured by this measure both traumatic and secondary erysipelas, and Dr. PIAZZA affirms that in his hospital it has become an established and successful mode of treatment, without having recourse to any internal general medication.—*Le Movement Médicale*, Dec. 3, 1871, from *Revue Méd. de Toulouse*, Sep. 1871.

50. *Cancer treated by Condurango.*—Mr. J. W. HULKE read before the Clinical Society of London a paper on cases of cancer treated by condurango in the Middlesex Hospital. The author and his colleague, Mr. Campbell De Morgan, were enabled by the present of a parcel of condurango bark by an American surgeon to begin, in November last, a second trial of this reputed remedy for cancer. When this supply ran short, the trial was continued with bark bought of Messrs. John Bell & Co., and with a fluid extract very liberally placed at the author's disposal by its makers, Messrs. Bliss, Keene & Co., of New York. After briefly noticing its natural history, and the physiological and therapeutic properties assigned to the condurango, the author proceeded to relate two cases of ulcerated hard cancer of the female breast, and one of rodent cancer of the face, in all of which the exhibition of the reputed remedy failed to modify favourably, or to retard the progress of the disease. The result of this trial confirmed the author's first one, made in August and September last, which showed that, as a remedy for cancer, condurango was absolutely inert.

Mr. De Morgan also read a paper containing a report of three cases treated at the Middlesex Hospital, showing the uselessness of condurango: and he mentioned others which had come to his notice, tending to prove the same thing. He considered it very important that the fact should be widely made known that this and other so-called remedies for cancer had really no effect on the disease, as statements of wonderful cures were inducing the public to put faith in them, and to waste time and money in their trial. Of the cases on which he had tried the medicine, two were advanced cancers of the breast, and one was uterine. The patients were suffering generally from the effects of the disease, and were considered fit cases on which to try the experiment. The medicine was given regularly and carefully in the manner directed. In no one instance was there the slightest improvement in the conditions of the local disease, which advanced at the same rate as before; neither was there any diminution of pain or discharge, or any change for the better in the characters of the ulcerations. There was not, moreover, any general improvement. For a day or two they thought they had a better appetite, but this was the mere transient change one always sees in cancer patients. None of the changes which were said to take place in the conditions of the urine or the perspiration had been observed. Mr. De Morgan's impression was that the downward progress of these patients had not been arrested for one instant by the agency of the drug.—*Med. Times and Gazette*, Feb. 24, 1872.

51. *Thrombosis of Internal Carotid Artery*.—M. VERNEUIL communicated to the French Academy of Medicine, January 16, a highly interesting and rare case of this, the result of external injury, and which gave rise to anomalous symptoms and a faulty diagnosis. A man, aged forty-five, was brought, on December 14, to the Lariboisière, having been a short time before extricated from beneath a railway wagon which had been overturned. On his admission he was the subject of excessive agitation, which prevented any account of his injury being obtained from him. Gradually this disappeared, so that he was able to answer questions in the most clear manner. On examination, slight contusions on the vertex and elsewhere were found; but nothing could be discovered capable of explaining the signs of violent pain, the cries, disordered movements, and the great disturbance of respiration, of calorification, and of the circulation which he had exhibited on admission. These were regarded, therefore, as the effects of emotion; but in the evening he was seized with violent delirium, so as to require restraint, and this was followed in a few hours by profound coma and complete hemiplegia of the right side. His treatment, on account of his depressed condition, was merely expectant, and towards the fifth day he died. It was supposed that there had been laceration of a cerebral artery of small calibre, followed by slow effusion of blood; but at the autopsy not the slightest trace of effusion of blood or other lesion was at first discoverable. It was not until the base of the skull was examined that the true nature of the case was discovered. The internal carotid, on its entrance into the cranial cavity, was found to be filled with a thrombosis, which extended to all the ramifications of the middle cerebral artery, the carotid and Sylvian arteries seeming exactly as if they had been injected with suet. The anterior extremity of the left temporal lobe of the cerebrum was the seat of a widely extended ramollissement, fully explaining the hemiplegia observed. On following the track of the carotid downwards, it was found to be distended by a reddish, friable coagulum, until within a finger's breadth of the common carotid. From the base of the cranium to this point the artery was increased by at least one-third in its volume, suddenly diminishing in size there. On incising it at this spot, it was found that the internal tunics had been cleanly cut across, and, pushed back by the current of the blood, they had given rise to valvular folds, the free edge of which was turned towards the axis of the vessel. At this point the coagulated blood completely obliterated the calibre of the artery, the occlusion extending from below upwards to all the cervical and intra-cranial portions of the internal carotid, and also occupying the entire extent of the middle cerebral artery.

M. Verneuil suggests that it is probable that at the moment of the accident

a laceration of the carotid was caused by a forcible twisting movement of the neck, although the arterial tissue exhibited no morbid alteration favouring this. At first, blood might have been able to enter the encephalon; but, when occlusion was produced, the cerebral accidents supervened. The ramollissement came on on the fourth or fifth day, at the time when the thermometer indicated a notable rise of temperature. M. Verneuil pointed out to pathologists the importance of a minute examination of the cerebral arteries in analogous cases. In many of these an absence of lesions has been believed in solely from not having taken this precaution, while a more complete examination would have exhibited the material lesion.—*Med. Times and Gazette*, Feb. 3, 1872.

52. *Resection of the Œsophagus*.—In the current number of Langenbeck's *Archiv*, Professor BILLROTH, of Vienna, contributes a most interesting and suggestive paper bearing the title, "*Ueber die Resection des Œsophagus*." He states that some time ago, after a post-mortem examination of his first patient affected with carcinoma of the Œsophagus, the possibility suggested itself of making a resection of this part of the alimentary tube. The fact that the lymphatic glands in the neighbourhood of the diseased part are not generally affected, and the partial success which had hitherto attended the operation of Œsophagotomy in this disease, together with the analogy of external urethrotomy in cases of gangrene or ulceration of the urethra, seemed to lend support to such an idea. The passing, moreover, of bougies through cicatricial tissue was far preferable to the manipulation of such instruments in a tube with ulcerated and weakened walls.

On April 21st of last year, a large dog was put under the influence of chloroform, and a piece, about an inch and a half in length, was cut out of the whole circumference of the Œsophagus. The lower end of the divided tube was then fastened by a couple of sutures to the skin at the margin of the external wound. Up to the 26th of the same month the animal was fed with milk through a tube passed into the wound, but on and after this date the tube was passed *via* the mouth. A week after the operation the sutures were removed. By the end of June the fistulous opening had completely closed, and the process of healing would have been quicker if it had not been that the dog, like human patients, dissatisfied with "milk diet," purloined the more solid food of neighbouring victims to science. After the closure of the Œsophageal fistula, which took place at the end of June, the tube was daily dilated by a bougie of the diameter of a large index finger. After the healing of the wound the dog was in capital condition, eating meat, potatoes, etc., but the variety of fare was not allowed to extend to bones. On July 26th the animal was killed with cyanide of potassium; and all that was found as a trace of the operation was an annular scar, scarcely half a line in width, and, moreover, easily dilatable.—*Lancet*, Jan. 6, 1872.

53. *Gunshot Wounds of the Brain*.—Prof. PODRAZKI narrates (*Weiner Medizin. Wochenschrift*, Dec. 9 and 16, 1871) an interesting case of this.

Early in October, 1869, a youth, aged 15, was accidentally shot in the head by a pistol, and on Professor Podrazki seeing him next day he found a round wound one centimetre in diameter, situate at the internal end of the left arcus superciliaris, into which he could pass the end of his little finger. At its bottom he found some coagula, and could feel a slight pulsating movement. The bony edges of the wound were sharp and jagged, and the surrounding skin was blackened by the powder. The lad, who was robust and healthy, lay pale and senseless, the pupils being widely dilated and in nowise sensitive to light. The breathing was stertorous, and the pulse, which was very compressible, beat only 54. A small quantity of slightly blood coloured serum flowed from the wound. Both extremities were completely paralyzed on the right side, and the urine had passed away involuntarily. The practitioner who had first seen him had passed a probe some five or six inches long into the track of the wound (which ran horizontally backwards) without coming in contact with the ball. The diagnosis here was easy, all the symptoms indicating that the projectile had probably done excessive injury to the left anterior lobe of the brain, and that

this had been attended with a considerable extravasation of blood either into the substance of the brain or between its surface and the bony coverings. Where the ball might be could not be conjectured. Of course, the prognosis was highly unfavourable. The treatment was expectant, ice being applied to the head, strong soup administered, and cold-water clysters given as an occasional aperient. Searching for the ball was out of the question, and the locality of the wound prevented the patient being placed in a position favouring the action of gravity.

In a few days the patient's consciousness gradually returned, so that he became able to answer questions, but only after long consideration, as if he were in search for words, and then very slowly—in complete contrast with his ordinary quick and lively speech. In about a week some pain in the head appeared, accompanied by a pulse of 130, regular morning vomiting, and sleepless nights. There was occasional delirium, and the palsied limbs were very tremulous. The discharge from the wound consisted in part of genuine pus, and in part of serous fluid. This condition of things had several times alternated with a remarkable remission of disquieting symptoms, when suddenly, about the middle of November, a soft, pale-red tumour made its appearance, projecting from the wound, but gradually became covered over by the granulations and skin, which formed over it a tolerably firm cicatrix. At first only of the size of a hazel-nut, it gradually but slowly increased. Simultaneously with its appearance the condition of the patient exhibited a most marked improvement, his pulse going down to 80, his consciousness being clear, his sleep and appetite excellent. Even the paralysis exhibited decided improvement.

On December 12—two months after the accident—Professor Podrazki was alarmed at learning that the surgeon in attendance had mistaken this tumour lying over the healed wound for an encysted tumour, and had proceeded to remove it. Alarmed, however, by the large quantity of black blood that issued on an incision of the skin, he desisted from the attempt. The author, on arriving, found a hernia cerebri of the size of a small walnut, which had become covered by a firm cicatrix. This having been cut through, as stated above, the pure cerebral mass projected. An attempt at returning this having been attended by the sinking of the pulse from 90 to 54, and by the patient becoming faint and cyanotic, it was determined to leave it as it was, only covering it with oiled linen and wadding. At the same time a remarkable appearance was discovered a little above the external occipital protuberance—a small, elastic tumour, the size of a bean, which, on pressure, yielded somewhat and felt painful. Spontaneous pains had, it seems, all along been occasionally felt here. The bones appeared entirely intact; but as this small tumour corresponded pretty nearly to the spot at which the ball coursing along the inner surface of the bones might be expected to reach, the question arose whether the swelling was not connected with the presence of the ball, and whether trephining would not be justifiable in order to secure its removal and to give issue to the pus, which possibly was the cause of the hernia cerebri. This procedure Professor Podrazki considered too conjectural, and at all events not to be had recourse to unless symptoms of cerebral compression came on. The patient at that time was improving every day, the paralysis having much diminished, so that he was able to sit up for some hours daily. He had, however, entirely lost the power of memory for recent occurrences and for things that had happened only a few hours, while remote events were well recollected. His visual power was also to some extent enfeebled. It was resolved not to interfere. There was a continuous flow of a clear, serous fluid (cerebro-spinal?) from the wound made by the incision, and the hernia cerebri—or, as Professor Podrazki prefers calling it, the prolapsus of the brain—continued to increase, until it had attained the size of a walnut, projecting over the incision-wound. By July, 1870, complete cicatrization had taken place, and a photograph is given of the lad's appearance at that time. The tumour measured two inches in length, and was one inch and a half in thickness, being quite transparent, and very elastic in its anterior part. At its base the sharp edge of the bony aperture could be felt, surrounded at its lower portion by somewhat pointed osteophytes. Compression employed for some minutes diminished the size of the tumour remark-

ably, this becoming soft, and having a faint pulsation, while the usually excessively distended skin was thrown into folds. This pressure, however, threw the patient into a state of syncope, his pulse becoming remarkably slow. The tumour evidently only in part consisted of cerebral substance, the remainder (in its anterior portion) being cerebro-spinal fluid; and the author resolved, in consultation with Hofrath von Pitha, to resort to puncture. This he executed in November, 1870, by means of Dieulafoy's *aspirateur pneumatique*, and the tumour immediately diminished to half its size, while the remainder was, by means of gradual and gentle pressure, entirely returned, without any symptoms of cerebral pressure being produced. A pad was applied to retain it. Quite recently the author has heard from the lad's friends that nothing now remains of the tumour, the forehead being quite even, the aperture in the bone being filled up with a firm cartilage-like substance. The general health is excellent, and the patient is able to walk about, though only slowly, as the power of the right foot is not yet quite restored, although the paralysis of the arm has completely disappeared. Speech is still slow and difficult, and has become remarkably deep. The intellectual power has not yet diminished.

Professor Podrazki observes that the friends of the lad regard him as cured, but for the surgeon he is still a subject of anxiety; and it is only in a qualified manner that he reports the case as a "recovery." Indeed, in some interesting general observations with which he prefaces the narrative of this case, it is evident that the greatest caution must be observed in delivering our prognosis in this class of injuries. We have only space to briefly allude to some of the remarks in question. Sometimes, it is observed, death takes place only weeks or months after gunshot wounds of the head, either in consequence of secondary inflammation having been set up, an abscess having formed in the track of the wound, or from decomposition of extravasated blood. As long as the ball remains within the skull, life is permanently menaced, although the wound may have completely healed, and all cerebral disturbance have disappeared. Various authors have recorded cases in which, even years after apparently complete recovery, death has taken place, either suddenly without preliminary symptoms, or under an apoplectic attack, or with a gradual loss of strength. In the great majority of cases, acute encephalitis or meningitis occurs, the patient dying with symptoms of compression of the brain from the formation of matter, or with those of pyæmia. Sometimes death takes place quite suddenly, when all seems to be going on quite well. This was so in a soldier from the Italian war, who, standing upright by his bed, and questioned as to his ailments, laconically replied that he had a ball in his head. And so it proved. The pulsations of the brain were visible through an aperture in the frontal bone. His pulse beat only 44, but otherwise he seemed very well, and was making decided progress, when, on standing up, he fell down suddenly, dead. An abscess was found in the anterior lobe of the brain, and the ball lay at the bottom of it. In other cases the ball sinks by its own weight through the soft mass of the brain until coming in contact with some important part, it at once causes death. Sometimes it reaches the base of the skull, where it remains long without doing mischief, or may become eliminated—although this is one of the rarest occurrences. Patients are placed in the greatest danger by attempts being made to search for the position of a ball by means of a probe; for this may easily, without being perceived, penetrate uninjured portions of the soft mass of the brain, and give rise to immediate death. Whenever the probe is used, all pressure must be abstained from, the instrument being left to glide along. The occurrence of prolapsus or hernia cerebri, which usually takes place only some weeks after the occurrence of the injury, adds much to the gravity of the prognosis. According to Bruns, about two-thirds of those who exhibit this die, and Professor Podrazki's experience leads him to consider this a too favourable statement. The seven cases which have occurred in his clinic at the Joseph's Academy between 1854 and 1870 have all died.—*Med. Times and Gaz.*, Feb. 17, 1870.

54. *Excision of the Diaphysis of the Humerus after Fractures from Gunshot.*—M. OLLIER read recently before the Lyons Society of Medicine a very

interesting memoir on this subject. He had performed the operation in three cases during the late campaign on the Loire, removing nine, seven, and six centimetres of the bone; and all the patients did well. In one of these the excision of six centimetres was performed on the upper third of the humerus, below the head, which firmly united with the rest of the bone, and the uses of the limb were completely re-established, the shortening which remained being only twenty-five millimetres.

The cases of gunshot wound of the humerus, M. Ollier observed, in which his operation is indicated are comparatively rare, and expectation should be the general rule. It is in comminuted fracture, with denudation of the periosteum and confusion of the medulla, and especially when the projectile remains amidst or in the vicinity of the fragments, that intervention should take place. At a later period inflammation and pain may also render excision necessary; for one of the immediate consequences of the operation is the disappearance of the pains, to the great relief of the patient. M. Ollier's mode of procedure is entirely different from the old one for the removal of fragments of bone; for, in spite of the comminution, a true sub-periosteal excision should be attempted. Each fragment is successively seized and separated from its periosteum, so that at last a tolerably complete periosteal sheath is obtained, in spite of its lacerations opposite the seat of fracture. The bone, in fact, being a very compact body, is broken into a number of fragments completely separated from each other, while the more supple periosteum resists. It becomes more or less torn, and remains adherent to the soft parts and the fragments, especially in young subjects. The modifications produced in the periosteal adhesions by age are indeed considerable, and are very important as regards operations. When the splinters have been removed, the fragments must be excised to beyond the extent of the fissures. If, however, the fissure extends to the spongy tissue, and the subject is young, it need not be pursued if the soft parts are intact; but when it penetrates to a joint, an articular excision must be executed. After an excision, the ends of the bone should be brought nearer to each other, in proportion as there is little expectation of bony reproduction, which is less in proportion to the age of the patient. The silicated bandage favours the reparative process, and may require to be continued for months. In answer to a question as to the prevention of stiffness of the joints ensuing, M. Ollier replied, that, so long as the inflammation persists, the bandage must be left on, it being indeed the best means of limiting the traumatic inflammation; and whenever it is renewed, movement should be imparted to the elbow and shoulder. The apparatus may, in fact, be left on without renewal for a month or five weeks, and ankylosis will usually be avoided, unless the fracture is too close to the joint. In conclusion, he repeated that expectation is the rule, and that excision is only suited for particular cases. It is especially indicated when, some time after the accident, complications arise; while, when there is intra-articular fracture, it should be performed immediately. The influence of age must also never be forgotten.—*Med. Times and Gazette*, Feb. 24, 1872.

55. *Hydrarthrosis of the Knee in Fracture of the Femur*.—On the occasion of a communication presented by M. Gayet to the Lyons Society of Medicine, "On Hydrarthrosis of the Knee in Fractures of the Femur," M. Ollier observed that he had long observed this circumstance, but did not consider it as peculiar to the knee-joint. Indeed, in the articles "Ankyloses" and "Arthrite," in the *Dictionnaire des Sciences Médicales*, now publishing, he has shown that such swelling may affect various joints, the amount of effusion being proportionate to that of the irritation produced by the fracture. Ordinarily, it is serous in its nature, but it may become purulent, notwithstanding its distance from the seat of fracture, when this is the seat of violent inflammation. M. Ollier refers these effusions to the propagation of irritation through the osseous tissue, and has described them under the name of *arthrites par propagation*, or *secondaires*. What led him to take this view of their nature was that he had observed them to be produced experimentally in other traumatic lesions of the bones, which could only operate by transmitted irritation, as after breaking up and evacuating the medulla through perforations made in

the bone. He is unable, therefore, to agree with M. Gayet's view, that these effusions are a consequence of obstacles to the return-circulation in the vessels of the medulla. The irritation transmitted through the vascular tissues of the bone gives rise to an increase of the normal secretion of the synovial membrane, and the same thing is observed in some forms of coxalgia. M. Ollier does not consider that the effusion in the knee is here connected with the synovitis of the hip-joint, but with the juxta-epiphysary osteitis of the upper part of the femur, which, in consequence of the relation of the diaphysis with the articulation, soon becomes confounded with the true coxalgia. The propagation of the irritation through the femur seems also, to him, to furnish the most general explanation of the persistent pains in the knee observed in coxalgia. With M. Gayet, M. Ollier believes that, in some exceptional cases, hydrarthrosis of the knee may assist in completing the diagnosis of fracture of the femur. But this is only an example of what is met with, more or less, in all joints which form the limits of a fractured bone, being more easily recognizable in the knee in consequence of the extent and superficial position of its synovial membrane. M. Ollier has observed it distinctly, also in the elbow and wrist after fracture of the ulna, and in the instep after fracture of the shaft of the tibia. If femero-tibial hydrarthrosis is less frequent after fractures of the tibia than after those of the femur, this is because the vessels of the synovial membrane and of the articular soft parts have more numerous anastomoses with those of the femur than with those of the tibia. M. Ollier regards the proposition of removing the effused fluid by means of an aspirator as useless, inasmuch as it is generally absorbed in the course of a few days. In removing it we should transfer a serous into a dry arthritis—that is, we should facilitate the production of ankylosis, or at all events the stiffness of the joint, which will take place as long as the synovial membrane is distended with fluid.

M. Delore observed that he had often met with this hydrarthrosis of the knee in fracture of the femur, but he does not believe that it should be employed as a sign of such fracture, as it may be produced by a simultaneous contusion or sprain. He cannot admit the theory of transmitted osseous irritation, as it may supervene very rapidly after the fracture. M. Gayet explains the hydrarthrosis by an obstacle to the medullary circulation only; but it would seem more reasonable to admit an impediment in the circulation in the whole substance of the limb, induced by an extra-osseous effusion of blood which takes place in all fractures. M. Delore also refers to the phlyctenæ which are sometimes produced, containing either blood or more or less coloured serosity, and which, he believes, are due to the same cause as hydrarthrosis. He is certain that the hydrarthrosis is very seldom dependent upon arthritis, and that very rarely can the pain in the knee, observed in coxalgia, be attributed to arthritis. Very often we are able to squeeze the knee without giving rise to any pain, while this immediately appears if we apply pressure at the hip. Moreover, these pains are found not only in the knee but also in the leg, or even in the foot. In his opinion they are sympathetic. M. Ollier added, in explanation, that these effusions are to be distinguished according to the period when they occur. Those which are produced immediately, or rapidly, are due to distension or spraining of the knee, which accompanies most fractures; while those which come on more slowly are the products of propagated irritation. The former result from laceration of the capsule and synovial membrane, more or less blood being always added to the effusion; the latter, which are simply the result of propagated irritation, consist of a more or less transparent serosity, as in any other case of serous arthritis.—*Med. Times and Gaz.*, Dec. 30, 1871.

56. *Ovariectomy during Pregnancy.*—Dr. EUGENE GODDARD, at a late meeting of the Obstetrical Society of London (*Med. Times and Gaz.*, Jan. 6, 1872), narrated the following case of this: The patient was 29 years of age, and in 1870 was found to be the subject of an ovarian cyst, but as there were no urgent symptoms, the consideration of any surgical treatment was deferred. She then became pregnant, and about the end of the second month of utero-gestation, Mr. Spencer Wells removed the ovarian cyst. Eleven and a half

pints of fluid were withdrawn. The clamp was removed, and the bowels acted on the eighth day. Pregnancy went on uninterruptedly, and a living child was born at the full period. Dr. Goddard said that the compound nature of the cyst precluded the idea of tapping, as also did the risk of peritonitis, supuration of the cyst, and the formation of adhesions. Premature labour was not induced, because the patient was already beginning to suffer constitutional disturbance from the double burden, and it was doubtful whether, by the time a viable child could be born, they would have assumed such magnitude as to imperil the patient's safety; whereas, if abortion were induced, the child would be lost and the tumour would remain.

Dr. Ross related a case in which Mr. Wells had operated under more adverse circumstances, as the lady was much broken down in health at the time of the operation. A small ovarian tumour was diagnosed eighteen years ago. The patient subsequently got married, and Dr. Ross had attended her in four labours. In no instance was parturition attended with any serious difficulty. It was observed that during gestation the tumour appeared to become smaller. The tumour rapidly increased about a year ago, and Mr. Wells removed it successfully, the patient being about two months pregnant. Her labour is now daily expected.

Mr. Spencer Wells said that the existence of the cyst for eighteen years, and the presence in its walls of hard, bone-like masses, had led to the diagnosis of a dermoid tumour. Mr. Wells had performed ovariectomy four times during pregnancy, and all the patients had recovered.

57. *Traumatic Tetanus*.—Dr. J. FAYRER records (*Indian Med. Gaz.*, Feb. 1872) three cases of traumatic tetanus; one resulting from lacerated wound of right great toe, the second from a wound of the left index finger, and the third from wound on dorsum of right foot. Cases one and two recovered from well-marked symptoms of the disease after amputation of the wounded part in which the disease originated. In the third case, removal of the cicatrix was not successful, the disease progressed, and the patient died.

In two cases there could be no doubt, Dr. F. says, that the origin of the disease was completely removed, for as the wound was situated on the digitis, and those parts were amputated, the injured afferent nerves, viz., those which conveyed the evil influence to the nerve centres, were necessarily divided. The source of disturbance being removed, the symptoms subsided and the patients recovered. I have, on a former occasion, recorded a similar case in which a favourable issue resulted, and those now noted tend to prove that if the part whence the irritation sets out, and which, if allowed to remain, excites that peculiar polar condition of the cord which results in the waste of nerve force, tetanus, be removed early, the perturbation, though great, is not necessarily permanent, and may subside.

Though no one would hesitate to amputate a finger or toe in such a case, most would hesitate to apply the same treatment in the case of a limb, until the symptoms of tetanic spasm became so severe as to leave no doubt as to the greater danger incurred from the disease: unfortunately it is then too late; the disease is thoroughly established, and amputation is as powerless to remove the results as any other remedy.

In so desperate a disease as traumatic tetanus, the most desperate remedies are justifiable, and I would suggest the advantage of resorting to amputation, even of a leg, on the earliest invasion of the symptoms.

Amputation, I am quite aware, has often been practised and with unfavourable results, but I am inclined to believe that it has not, as a general rule, been resorted to early enough to give it a fair chance of success.

No one would recommend amputation of the limb if the peccant nerve could be isolated and divided, as in the case of that leading from a finger or a toe.

In a wound of the leg or arm it is almost impossible to indicate the branch or trunk that is the conductor of mischief to the center; and therefore to secure its division the whole limb must be removed.

The hydrate of chloral may have had something to say to the recovery in these cases, but I have not found it successful except as euthanasia, in these cases.

58. *New Treatment of Traumatic Tetanus.*—M. DEMARQUAY recently addressed a short communication to the Académie des Sciences, giving an account of a new mode which he has adopted of treating traumatic tetanus. Having, he says, during the late siege, lost many cases without being able to alleviate them, he resolved in future to try a new procedure. First bearing in mind the great susceptibility to cold manifested by these patients, and the aggravation of the suffering which this produced, he kept the two cases he now reports upon in a room heated to and carefully kept at a temperature of from 18° to 22° C. (64° to 72° F.). Next, in order to diminish the tonic and clonic contractions, which are in this disease so painful, causing the patient to assume such strange positions, and especially to subdue the trismus, which is one of the earliest manifestations of tetanus, as well as to relieve the pain of the wound and the convulsions of the stump, he performed, four or five times in the twenty-four hours, intra-muscular injections, as near as possible to the emergence of the nerves. These consisted of solutions of morphia diluted to a fiftieth part. At first each masseter was injected, as also the muscles of the neck on each side of the spinal column; and when the wound which had been the occasional cause of the tetanus was painful, an injection was thrown deeply into the substance of the muscles in its vicinity. Under the influence of these remedies the sufferings were speedily assuaged, and the patient was enabled to open the mouth, and by copious drinks relieve the tormenting thirst. By aid of these, too, and the raised temperature of the room, abundant transpiration was produced. After some hours the injections were repeated, the painful contractions being pursued wherever they appeared, throwing them into the substance of the muscles concerned. They were also made over the track of the nerves of the diaphragm, to subdue the spasm of this muscle, or along the course of the pneumogastric, with the view of relieving the difficulty of deglutition, which appears to depend upon contraction of the œsophagus. In this way the pains were assuaged and the thirst relieved, while the patient was able to be fed with broths, milk, and an increasingly substantial diet. One of the two cases was suffering when seized with tetanus from a deep wound of the calf in process of cure, while the other had undergone amputation of the leg. In both, the tetanus, to all appearance, was very severe; and although, of course, two cases do not say much in favour of any mode of treatment, their successful issue justifies its being made known. Frequent subcutaneous injections of morphia, atropia, and curare have been tried, but, as far as M. Demarquay is aware, no one has hitherto thought of carrying the curative agent deeply into the substance of the muscles. This is, he believes, to be both a novel and rational procedure.—*Med. Times and Gaz.*, Oct. 7, 1871.

59. *Transfusion.*—The *Dublin Journal of Medical Science* (January, 1872) contains two papers on this subject read before the Dublin Obstetrical Society, by Dr. A. H. Ringland, the other by John Ringland, M.D., with a report of the discussion to which the reading of these papers gave rise. Dr. A. H. Ringland's paper presents a very interesting history of the operation. Dr. John Ringland relates a case in which transfusion was successfully resorted to in a case of post-partum hemorrhage.

Dr. Robert McDonnell made some interesting remarks on the method of performing transfusion. He said "there were some operations, such as those for the removal of tumours and for aneurisms, &c., which could not be practised on the dead subject. There were others, of which transfusion was one, which could be thus practised; and that being so, it was inexcusable for any young surgeon not to avail himself of his opportunities to make himself familiar with the details of an operation which he might afterwards find necessary for the preservation of life. This was essentially an operation of detail. In the first instance perfect cleanliness was indispensable. All the instruments, the tubing, the pipette, should be perfectly clean; the bowl in which the blood was received should be scalded with hot water, and the muslin used in straining the blood should be scalded also. In the second place, the only really difficult part of the operation when it came to be performed was the opening of the vein in the person into whom the blood was to be transfused. It was like taking up a vein

in the dead body. There was this only difference between the dead and the living bodies—that in the latter, owing to the cold air getting at the vein, its muscular fibres contract, and it becomes very small. Hence the importance of passing a needle under it, so that one might always be able to find it when necessary. He believed that in both the cases that were detailed that evening the apparent difficulty found in putting in the blood arose from their natural anxiety to see it flow in quickly. You think the blood is not going in, when in reality it is going in, but very slowly. He had never found any instance, when practising on the dead subject, in which the weight of the blood was not of itself sufficient to make the blood run in without difficulty. The nozzle which had been described by him in the *Dublin Quarterly Journal* was an important part of the instrument.

It is of great importance to have a canula, with a probe point, and the eyelet hole at the side, not at the end. The probe point was best suited for entering a small opening. They could easily make sure that all air was expelled before they put it in, and if, during the progress of the operation, a bubble of air was observed, it was possible to withdraw it, and allow the air to escape without any serious interruption of the operation. There was another advantage in an apparatus of the kind exhibited, well illustrated in the case detailed by Dr. Ringland. There was some delay experienced in getting at the vein in the woman's arm when all was ready for making the injection. In such a case it was only necessary to place the nozzle in the top of the tube, and the pipette could then be placed in a can of hot water, and allowed to remain there as long as the operator wished. It was evident that this was a great advantage, inasmuch as everything could be got ready for use without undue haste, and the operation could be carefully and deliberately performed without fear of the blood getting cold. He believed this operation was capable of being applied to a large number of cases besides those with which the members of that Society were so familiar in obstetric practice. He hoped it might be applied both in surgical and medical cases, not only in cases where accidents or ulcers had caused copious hemorrhage, but in cases of the nature of chlorosis or of cholera. Where an injection of saline solutions into the veins might be considered advisable, the appliances, for the purpose of transfusion being now so much simplified, should encourage surgeons to lend their aid to physicians in cases of that kind. He believed the most important thing connected with this operation was the establishing of the desirability of introducing *defibrinated* blood. "The risk of trying to inject blood not defibrinated was very great, and he was of opinion that the deaths which occurred several days after transfusion, occurred from embolism. He said then that, physiologically, the defibrination of the blood made it better for the patient, and surgically it disarmed the operation of most of its dangers and risks. With regard to the difficulty experienced in Dr. Ringland's case in getting the blood in, he was inclined to think that in all these cases it arose from their being rather precipitate, and thinking that the blood should go in faster than it really should. He had contrived a simple apparatus, by which a good deal more force could be put on, as in Bellina's apparatus by an India-rubber bottle; but at the same time he did not recommend it. It was important that the blood should not flow in too quickly, and he believed that gravitation alone was sufficient to get it in—at least gravitation aided by the pressure of the mouth. Care should be taken not to have the blood too hot. The operator should be provided with a thermometer in every case, otherwise he ran the risk of producing coagulation of the albumen. The blood should be heated from 100° to 105°, at which there was no risk of coagulation, and this temperature could be easily maintained.

OPHTHALMOLOGY.

60. *Neurosis of the Optic Nerve and Retina*.—Dr. HERMAN PAGENSTECHER narrates the case of a girl twelve years of age, who was brought to him for advice on account of rapid diminution of vision of four weeks' standing. For a year previously she had suffered from nervous symptoms—attacks of lameness, first of one leg, then the other, headaches, vomiting, etc., which always yielded to strychnia. On examination, vision was found very defective in both eyes: they were sensitive to bright light, and moderate darkening of the room improved the vision slightly; but the application of either a red or blue glass at once brought the vision almost to a normal standard. There was hyperæsthesia of the whole of the left side of the body, and pinching or striking any part of the left side induced reflex movements and appearance of bright spectra before the left eye. Blue-coloured glasses were ordered. Three days later the acuity of vision was found to be normal with blue glasses. The hyperæsthesia existed as before. The coloured spectra that appeared before the eye on pinching the left side of the head, were described by the patient as consisting of concentric rings—the outermost red, the innermost yellow, the intermediate black. Pressure over the back of the head and first three cervical vertebræ induced severe pain, and produced the brightest-coloured spectra. Pressure below the ninth dorsal vertebra on the left side produced merely the appearance of a red disk before the eye. During the next ten days the hyperæsthesia gradually diminished in degree, but was still markedly present at the end of that time. Dr. W. Müller saw the case, and applied the constant galvanic current, with the following effect: On applying the copper pole to the back of the head and the spinous processes of the upper cervical vertebræ, while the zinc pole was held in her hand, the weakest current produced the coloured rings above described during the whole period of the passage of the current. Applied below the seventh cervical vertebra, only the red colour was produced; below the third dorsal vertebra, no spectrum was produced. On direct stimulation of the right optic nerve by applying either the copper or zinc pole to the immediate neighbourhood of the eye, a yellow glimmer appeared on opening and closing the current, which, however, was persistent when the current was applied to the left optic nerve; the same occurred on passing the current through the head. Irritation of the sympathetic by applying one pole to the angle of the jaw, the other over the first cervical vertebra, induced a yellow colour. After stimulating the medulla for half a minute, all appearance of coloured spectra vanished, and they could not be reproduced by passing the current in any direction. During the course of the examination, the patient stated that the colours became less and less distinct, till yellow took the place of the other colours, and eventually it disappeared. The following day, pressure over the back of the head reproduced the colours as before. The constant stream, with the application of the copper pole over the medulla, was daily employed, and in the course of a few days the affection entirely disappeared.—*Edin. Med. Journ.*, Nov. 1871, from *Zehender's Monatsblatt für Augenheilkunde*, Jan. 1871.

61. *Syphilitic Amblyopia and Amaurosis*.—M. GALEZOWSKI has published in the *Archives Gén. de Médecine* (first three months of 1871) an essay on this subject, the deductions of which are as follows: 1. Syphilitic retinitis and neuritis may exist without any alteration of the choroid, and are mostly constituted by an apoplectic retinitis with exudation. 2. Syphilitic retinitis presents no pathognomonic symptoms by which it may be distinguished from other kinds of retinitis. 3. But when retinitis or optic neuritis is accompanied by iritis or choroiditis, with or without flakes in the vitreous, the affection is, without doubt, syphilitic. He has always found that no other affection, save glaucoma, can give rise simultaneously to apoplexy of the retina and to iritis or choroiditis. 4. The derangement of the chromatic faculty is ever present in these two forms of ocular alterations, and especially in optic neuritis. 5. These complaints are best treated by large doses of iodide of potassium and corrosive

sublimate (one drachm and a half of iodide of potassium, and from three-quarters of a grain to one grain of the sublimate per diem). 6. Syphilitic choroiditis is the most frequent form of syphilitic amblyopia and amaurosis. The signs of this choroiditis are very characteristic, and, as it were, pathognomonic of syphilis. They are as follows: *a*. Disturbance or loss of vision, occurring in fits, often at long intervals; *b*, a cloud in the shape of a cobweb constantly floating before the eyes; *c*, very frequent photoptics; *d*, photophobia; *e*, hemeralopia at an advanced stage of the complaint; *f*, preservation for a long time of central vision, with diminution of peripheric field; *g*, cloudy papilla; *h*, pigmentary retinitis at a more advanced period of the complaint; *i*, atrophy of the central vessels of the papilla with preservation of the rosy tint depending on the trophic or cerebral vessels of the optic nerve. 7. Pigmentary retinitis occurs very often as a sequel to syphilitic choroiditis. 8. The syphilitic pigmentary stains occur along the vessels of the retina, but they form, besides, circular masses in the shape of herpes circinatus. 9. Pigmentary syphilitic retinitis, the result of contamination, differs from congenital pigmentary retinitis (especially that form hitherto attributed to the consanguinity of the parents) only by the circular form of the pigmentary stains. 10. Congenital pigmentary retinitis is a hereditary syphilitic affection. 11. The latter complaint should, at a tender age, be treated by mercury or iodine. After a certain age the progress of the complaint cannot be stopped; it goes on increasing, and is followed at a more or less advanced period by loss of vision. 12. Children born of syphilitic parents should, at birth, be examined with the ophthalmoscope. If retinitis be found, the means just mentioned should be used.—*The Lancet*, Dec. 9, 1871.

62. *Amblyopia from White Atrophy of Optic Nerve greatly benefited by the Continuous Galvanic Current.*—An extremely interesting case of this is recorded by Dr. DONALD FRASER, of Paisley, in the *Glasgow Medical Journal* for February last. The subject of it was a weaver, æt. 59; had always been a healthy man, and temperate; for the last ten years has smoked two and a half ounces of tobacco per week. At the age of 44 he began to use spectacles for presbyopia. For the last nine years of his work as a weaver, he taxed his eyes severely at pattern weaving, working most of the day, during the greater part of the year, in gaslight. For the last five years his sight had been gradually failing. It was not, however, until the beginning of last year that he began to be alarmed at the rapid increase of this failure. He now became dyspeptic, low spirited, and weak; all this due, he considered, to the depressing effects of some family troubles. At this time, during the day, a mist came before his eyes, which passed away at twilight, so that by gaslight he could read, for a few minutes at a time, the largest type of the newspapers with No. 6 convex glasses. About nine months ago even this became impossible. When he consulted Dr. F., September 8, 1871, "he complained of a mist being constantly before his eyes, so that he was unable to recognize his most intimate friends above a yard off. I found that he could read slowly, and with effort, No. 20 of Snellen's test types at four inches from his eyes with the right eye, at eight inches with the left, and at six inches with both. On examination with the ophthalmoscope, the outer two-thirds of the optic disk in both eyes was found to be pearly white in tint and glistening, and the inner third hyperæmic, the retinal veins were enlarged and tortuous, and the arteries diminished in number and calibre. Alongside some of the vessels were to be seen the white lines said to be characteristic of *neuritis descendens*. There was here then a markedly atrophic condition of the optic nerve, most probably primary; there being no certain evidence either by the ophthalmoscope, or otherwise, of intra-ocular causes sufficient to produce such atrophy. I dismissed the idea of the disease being due to tobacco poisoning, although, in some respects the condition of the disk seemed closely allied to what is usually described as due to excess in smoking. At the same time there was not, and never had been, any symptom of cerebral affection. Still I have been strongly impressed with the idea that this was a case of primary degeneration of the optic nerve, a degeneration which may find illustration in cases of so-called tobacco amaurosis. Dr. F. advised

the patient to consult Dr. Thomas Reid, of Glasgow, who confirmed the diagnosis, and recommended the use of bichloride of mercury in combination with iodide of potassium, which treatment was commenced on the 10th of September, and continued for a month. During this time the patient was a good deal at the coast, and came back to town much improved in general health. His sight, however, was scarcely, if at all, improved; although he could read No. 20 at $7\frac{1}{2}$ inches. At this visit, I passed a current from six cells of a Stöhrer's battery through the temples for about twenty seconds. On testing his sight immediately afterwards, I found that he could read No. 20 at $9\frac{1}{2}$ inches; an improvement of two inches within a period of as many minutes. I advised him, however, to go on with the bichloride mixture for another week or so. I saw him again on the 8th October, when I found, as I expected, his temporary gain had left him, he being only able to see No. 20 at $7\frac{1}{2}$ inches as before. I may here mention that in reading, my patient always sought to make the best of his case, so that the limit of clear definition would be more correctly stated at an inch less than the above figure. I again tested him with the current, the result being an improvement of three inches. Two days afterwards, he could read at $8\frac{1}{2}$ inches. I again applied the current, and immediately afterwards he read at 10 inches. Feeling satisfied now that the galvanic treatment would yield good results, I asked him to cease taking the mixture, and to call upon me every morning at 10 A.M. In order to insure accuracy in the results, I kept him to the same hour, position as to light, &c. The days at this season, and at the above hour, were usually dark and foggy; conditions, by the way, in which he could see best. On clear, sunny days, he described the mist as being particularly thick and dark before his eyes. About a week after I began the galvanic treatment he improved in this respect, being able to see best on a clear day.

"I continued the galvanization daily for a month, then every second day, sometimes every third day, and again every day as I thought fit. I sought to avoid the dangers of over-stimulation by the weakness of the current—six cells,—and the shortness of the application, which never exceeded thirty seconds. I applied the electrodes at first to the temples, and to the long axis of the head, at each break of the current producing the flash indicative of retinal irritation. Latterly, I applied one to the forehead, the other to the tongue, with alternations. Occasionally, and experimentally, I applied a current from eight cells to the cervical sympathetic—the results, however, never seemed so good as by the other methods.

"The treatment was continued for three months, during which time his progress was a matter of daily observation. At the end of that period he could read No. $5\frac{1}{2}$ Snellen with as much ease as at the beginning he could read No. 20. The improvement in his health and spirits due to this progressive recovery of sight has been very marked." Dr. F. has tabulated the results, and it is shown that every day there was a distinct improvement of one inch in his ability to read the test types, and this improvement was confirmed by ophthalmoscopic examination. "On the 19th November, 1871," says Dr. F., "I fancied, on examining the fundus, that the condition of the disk was, if anything, slightly improved. On the 11th January, 1872, I made a very careful examination, and was satisfied that while the atrophic condition of the disk was still very marked, there was an improvement. This was particularly so in the case of the retinal circulation, the arteries being distinctly larger in calibre, while the veins were smaller and much less tortuous. As it was an important point that there should be no doubt as to this improvement, I again asked my patient to see Dr. Reid, who substantially agreed with me.

"The question now is, how far this improvement will go. I do not expect that much more can be effected in the case, although I mean to continue the treatment twice a week or so for some time to come. A more important question is, how far will the results be permanent? My impression is, that with care on the part of the patient his present condition may be maintained for a considerable length of time, if not permanently.

"But whether this be so or not, it is evident from the ophthalmoscopic examinations, that we have not simply stimulated the patient's retina, but that we have

distinctly improved its circulation, as well as the nutrition of the optic nerve, and that this has been done in a disease in which ordinary medical treatment is practically useless." [Dr. F. seems not to have read the paper of Prof. Nagel, of Tübingen, on the cure of white atrophy of optic nerve, related by Prof. Chisolm in our last number, page 59, successfully treated by hypodermic use of strychnia.] In an appendix to his paper, dated January 24, 1872, Dr. F. refers to a recent work, *Traité d'Electricité Médicale, par les Docteurs E. Onimus et Ch. Legros*, Paris, 1872, where some cases of optic atrophy treated by galvanism are related.

63. *Treatment of Conical Cornea by removal of the top of the Cone.*—Mr. C. BADER, of Guy's Hospital, reports (*Lancet*, Jan. 20, 1872) nine cases of conical cornea in which favourable results were obtained by removing the top of the cone.

The operation he describes as follows: 1. Place the patient on a bed as for extraction of cataract, and bring him thoroughly under chloroform.

2. Keep the eyelids open with a stop-speculum, so as to press upon the eyeball as little as possible, and fix the eyeball with the forceps.

3. Immediately before commencing the operation, ascertain the position of the top of the cone by turning the eye to be operated on in different directions, while strong light is thrown upon the cornea with a two-inch convex lens.

4. The subsequent steps of the operation, however they be taken, should tend to remove the top of the cone (the entire thickness of the cornea), so as to cut an opening through the cornea into the aqueous chamber. This opening, somewhat oval-shaped, is from one-twelfth to one-sixteenth of an inch in its longest diameter; it was measured immediately after removal of the apex of the cone, after escape of the aqueous humour, the cornea having collapsed and being in contact with the iris. The pupil, in all cases, was opposite the opening in the cornea; the surface of the lens could be seen bulging into the area of the pupil. In the cases in which the thread was used, the latter caused an indentation in the crystalline lens while passing across the area of the pupil.

5. *Removal of the Top of the Cone.*—A small curved needle, armed with fine white or black silk, or with silver wire (or a gilded, small, sharp hook), is thrust through the cornea in its horizontal diameter, close to the portion of cornea we wish to remove. The point of the needle, after piercing the cornea, is carried horizontally across the aqueous chamber to a spot opposite the point of entrance, and again thrust through the cornea close to the portion of cornea we intend to remove. The aqueous humour escapes before or after passing the point of the needle through the cornea the second time. The needle or sharp hook is left in the cornea until the top of the cone has been removed; it helps to protect and keep back the crystalline lens. The portion of cornea (the top of the cone) situated in front of the needle is then removed as best we can. This part of the operation is somewhat difficult, the cornea being transparent or nearly so, extremely thin and flaccid, and the iris and lens being in contact with the cornea. The head of the needle is held in one hand, and with a cataract-knife, or with a sharp, narrow, lancet-shaped knife, an incision is made through the cornea (a small flap incision, as in flap extraction for cataract). Having made the incision, the needle is let go, the small flap seized with an iris-forceps, and the rest of the cornea (of the cone) removed with the knife or with scissors.

6. *Closure of the Wound (opening) in the Cornea.*—If a sharp hook or a needle without thread has been used for transfixing the cone, it is withdrawn after removal of the cone, and the wound left open. The eyelids of both eyes are then closed, kept bound up and cool with wet lint, and the patient kept in bed for three days; on the third day the use of the eye not operated on is permitted, while the eye operated on is kept bound up until all redness has subsided. If a needle, armed with silk thread, has been used, the needle, after removal of the cone, is drawn out gently by the second opening in the cornea; so that the thread, while passing across the aqueous chamber, the surface of the iris, pupil, and crystalline lens, irritates those parts as little as possible. The opening in the cornea is closed by tying the thread, as is done when uniting

the margins of a wound by a suture. The suture is tied tightly. If it should give a little before completing the knot, it does not signify. The cornea, by the suture, is thrown into numerous folds. This folded condition continued in an extreme degree in one case for nearly four weeks. Having united the wound, one end of the thread is cut off close, the other left about a quarter of an inch long, so as to assist when removing the suture. Both eyes are kept cool and bound up with wet lint. The patient remains in bed. The suture is removed on the appearance of slight chemosis and swelling of the eyelids.

7. *Removal of the Suture.*—The patient being rendered insensible (by methylene), the lids are kept open without pressing upon the eyeball, the surface of the cornea is well cleared from mucus, &c., and the long end of the suture drawn away from the cornea, so as to stretch the suture, and the latter cut through and withdrawn. After this, the lids of both eyes are again carefully kept bound up with wet lint. The use of the eye not operated on is permitted on the third day after removal of the suture. The operated eye is kept bound up, and the lint cool, until all redness of the eyeball has subsided, or nearly so, when an artificial pupil is made.

8. Any other mode of destroying the apex of the cone in conical cornea—for instance, by the galvanic cautery—would, I believe, answer as well as abscission of the cone.

Disadvantages of the Operation.—An opaque spot in the cornea, from where the cone had been removed. The patients were told that there would, after the operation, remain a small white speck on the eye, but that nothing except an operation could improve sight. None of the patients complained of the disfigurement, and all were pleased with the amount of vision obtained.

The necessity of giving an anæsthetic repeatedly. For removal of the suture, and for the artificial pupil, methylene is quite sufficient.

Advantages of the Operation.—In extreme cases of conical cornea a greater improvement of sight is obtained than by any of the known modes of treatment.

No untoward accident occurred in any of the cases.

The after-treatment, after removal of the suture, is very simple. The patient need only be seen at great intervals.

The conical cornea in all cases completely disappeared, and gave way to an abnormally flat cornea.

64. *Extraction of Cataract by a Peripheral Section of the Iris without injuring the Pupil.*—Dr. CHARLES BELL TAYLOR recommends (*Lancet*, Nov. 4, 1871) the following method: "Having separated the lids with the speculum, the eye should be gently turned downwards with a pair of ordinary forceps in the operator's right hand. Having got the globe into a favourable position, it should be fixed by the sharp forceps at about the junction of the upper with the middle third of the cornea; the pointed knife is then entered in the corneo-sclerotic junction one or two lines from the forceps at the summit of the cornea, pushed well into the anterior chamber, and then, with a gentle sawing motion, carried along the summit until about one-third of the cornea has been incised. The capsule is then carefully divided with Von Graefe's cystitome, having been previously rendered tense, and the eyeball fixed with a pair of ordinary forceps. (It is better to open the capsule at this stage, because bleeding from the wounded iris—and conjunctiva also—at a later period is apt to fill the chamber and render this part of the operation obscure and difficult.) The upper segment of the iris is then seized, and a small piece of the periphery only excised, the pupillary margin and portion of iris attached to it being left untouched and free in the anterior chamber; the lens is then extruded through the gap in the ordinary way, gliding behind the pupil, so that there is no stretching of the sphincter.

"In this way I believe that I have secured all the advantages, in the way of safety and certainty, of an associated iridectomy (which I have already detailed), and at the same time attained that grand desideratum—a central and movable pupil.

"The instruments I employ are a pair of sharp forceps that pierce the sclerotic; a very light speculum (a modification of Von Graefe's); and two knives,

a line in width, and bent at an angle similar to the ordinary iridectomy knife—one with a sharp point, the other with a blunt or bulbous extremity.”

65. *Iridectomy without Division of the Sphincter Pupillæ*.—In a communication from Dr. B. A. POPE, contained in the *Archiv f. Augen u. Ohren Heilkunde II*, he suggests, that, when iridectomy is demanded simply for an optical purpose, the operation may be so performed as to avoid division of the sphincter of the pupil, and thus to prevent any injury to the natural movements of the proper pupil, which remains entirely distinct from the artificial one. To this intent Dr. P. has already operated with good results in six cases. His plan is, after an incision of the cornea, to allow the fluid of the anterior chamber to escape gradually, so as to prevent a prolapse of the iris. The latter is now to be seized by a small optical forceps at its pupillar edge, at the point where it lies beneath the most transparent part of the cornea, and gently drawn towards the centre of the eye, with the scissors a fold of the iris lying between the point of the forceps and the edge of the cornea is to be removed. The ordinary operation for iridectomy Dr. P. restricts to those cases in which from it is anticipated simply a therapeutical result, or both a therapeutical and optical result.—*Centralblatt f. d. Med. Wissenschaften*, Nov. 12, 1871, No. 46.

D. F. C.

66. *Paralysis of Ocular Muscles treated by Calabar Bean*.—MR. T. WHARTON JONES reports (*Practitioner*, December, 1871) two cases of paralysis, one of the superior oblique muscle, the other of the third nerve, both successfully treated by dropping on the eye a solution of the extract of Calabar bean.

67. *Effects of Calabar Bean and Atropia on the Human Eye after Death*.—BORELLI found that, if applied to the eye within six hours after death, these substances act on the pupil as during life. In exceptional cases, effects followed their application so long as twenty-four hours after death. He found the result of their application less marked in cases where death had ensued from old age or marasmus. The length of time that had elapsed after death also influenced the result. A reflection of the myotic action of the Calabar bean from the one eye to the other was also noticed, which never was seen in the case of the mydriatic action of atropia. This difference Borelli attributes to the fact that the brain, which is the organ of reflex action for the circular fibres of the iris, preserves its vitality longer after death than the great sympathetic which innervates the radiating fibres.—*Edin. Med. Journ.*, Nov. 1871, from *Giornale d'Oftalmologia Italiano*.

MIDWIFERY AND GYNÆCOLOGY.

68. *Concurrent Impregnation of both sides of a Double Uterus*.—DR. J. HARRIS ROSS records (*Lancet*, Aug. 5, 1871) an extremely interesting case of this. The subject of it was thirty-eight years of age, had had six children, nothing particular was noticed with regard to her confinements. July 16, 1870, she miscarried of twins, apparently between the fifth and sixth month. During the labour a second opening was felt close to the os uteri, but its precise nature was not then made out. About a week after the labour she declared that she was then pregnant, and the presence of another child was made out. She was delivered of a healthy female child on October 31, fifteen weeks and two days after miscarrying with twins. After recovery a complete examination was made. Two openings were found in front of the cervix. Upon introducing the sound into the upper or right aperture, it passed quite freely into a cavity two inches and a half deep to the summit, where it was cautiously moved in every direction with a view of discovering any communication that might exist between this and the supposed adjoining cavity, and on withdrawing the instru-

ment the same caution was exercised, and for the same purpose, but no such outlet or passage could be detected. The sound was then passed into the lower or left aperture, and traversed quite easily a cavity two inches and a quarter deep only, nearly parallel to the preceding cavity. Thus, between the two cavities there was a vertical partition or septum extending from the fundus to the front of the cervix uteri, and completely dividing the latter into two separate or distinct cavities. A curious corroborative proof of the concurrent impregnation in two distinct uterine cavities was, that the patient had menstruated (evidently from the uterus which had thrown off its contents) three times between her miscarriage in July and her delivery in October.

69. *Premature Delivery induced to Prevent the Intra-uterine Death of the Fœtus.*—Prof. A. GODEFROY, of Rennes, records (*Revue de Thérapeutique*, Dec. 15, 1871) the case of a lady, who at three successive pregnancies lost her children at the eighth month of gestation. As both father and mother were free from any syphilitic taint, Prof. G., and the lady's attendant, Dr. Baudouin, were led to ascribe the death of the fœtuses to the anæmic condition of the mother which disabled her from nourishing her fœtus till full term. When she became pregnant for the fourth time, it was determined to induce labour towards the end of the eighth month, which was accordingly successfully accomplished and a child delivered. A wet-nurse had been provided, and the infant with great care was raised. The mother recovered as well as from her previous labours, and the tonic regimen which had been previously prescribed was ordered to be continued.

This method of treatment was twice practised by Denman with success, for both mother and children, and once with a like happy result by Hayn of Kœnigsberg.

70. *Inversion of the Uterus.*—Dr. JOHN THOMPSON, of Bideford, relates (*British Med. Journ.*, Dec. 16, 1871) a very interesting case of this. The subject of it was a farmer's wife who had been previously confined five times. There had been some difficulty in all these labours, either a faulty presentation, or retained placenta, or the birth was premature. In her sixth labour the presentation was natural, she had arrived at full time, and delivery took place in a few hours. After handing the infant to the nurse, Dr. T. applied his hand to the abdomen of the mother, but instead of the usual uterine tumour there was, he says, "a vacuity such as I never before met with. As I had not attempted to withdraw the after-birth, this seemed strange; nevertheless, believing that inversion of the uterus only occurred where traction had been exercised on the funis, it did not strike me that it could have happened here. On examining the vagina, I found the placenta, and at once attempted its removal. In a few seconds it came away with an unusual sort of plunge as if a coagulum had emerged with it, and I tried to remove the mass from under the bedclothes to the ordinary receptacle, but found myself hindered by a band which appeared stouter than the ordinary membrane, and which was, in fact, the inverted vagina. Lifting the bedclothes, I was astonished to observe the after-birth and womb both escaped together, the latter completely inverted, and having the placenta partially attached. There was no bleeding, nor had much blood come away with the vagina. Promptly taking off my coat, and baring my arm, I first peeled off the placenta—this was done with great facility. No blood flowed from the uterine surface. Then, taking the uterus in my right hand, I passed it up the vagina, and, bending my fist, pressed nimbly against the fundus (my left hand meanwhile supporting the abdomen) and in an instant restored its position. My right hand passed into the uterine cavity, where I allowed it to remain till contraction came on, and it was only withdrawn when uterine action became decidedly expulsive. The patient, during this time, experienced no shock in her system; she lost but little blood, and subsequently made as good a recovery as she had done in any former confinement. Since that time she has not been pregnant, though she has had good general health, and looks ruddy, vigorous, and cheerful.

Two practical views derive support from the facts of this case; the first, that inversion may, and sometimes does, take place without interference on the part

of the attendant; the second, that reinversion may be readily effected, if the manipulation be prompt and well directed. Formerly, it seemed to be the opinion of the profession that inversion of the uterus always indicated a faulty interference on the part of the practitioner—perhaps the view now generally held is that this is only the most frequent cause.” * * * “The ease with which I restored the displacement was the most remarkable feature in the case; it contrasts strikingly with the distressing failures related in the columns of the different medical journals. The reason for this difference seems to me clearly attributable to the fact of my having acted at once. It is noticeable that in nearly every unsuccessful case the accident has occurred for some time before attempts have been made at reduction—in the majority it could not then be remedied. A reason for delay to procure professional assistance is afforded when, as in the instance I have described, the mouth of the uterus contracts over the course of the uterine vessels and prevents hemorrhage, but it is to be remembered that this is the very case likely to give the most resistance to reduction if delay be allowed.”

71. *Treatment of Dysmenorrhœa resulting from Abnormal Constriction of the Uterine Canal.*—Dr. PROTHEROE SMITH recommends (*Brit. Med. Journ.*, Dec. 16, 1871) the following method of treating this form of dysmenorrhœa: First he prepares the patient “by a purgative dose, and by abstinence from local excitement, and from alcoholic drinks, or much animal food. When hyperæmia exists, I scarify laterally the labia uteri repeatedly at the commissures of the labia, by which the vascularity of the organ is reduced, and the shape of the os tincæ, when constricted, is improved. After accustoming the uterine canal to bear a metal bougie, which should be repeatedly and daily introduced, and increased in size until that of a No. 10 catheter can be borne without any pain, then the uterine dilator may safely be employed.” [This instrument is constructed after the model of Huerteloup’s lithotrite, by which the extent and direction of the uterine cavity can be measured and a constriction of any part of the passage readily overcome.] It consists of “two short blades, two and a half inches long, the inner being continuous with the sliding shaft, with which it is nearly at a right angle, having at its proximate end a screw worked by a nut so as to mark precisely, by an index on the handle, the extent of dilatation employed. This should be used at first cautiously about every second day, always ceasing to screw as soon as pain is experienced. This is immediately relieved by a turn or two of the screw the reverse way.

“It will be found, in a short time, that the uterus becomes accustomed to the dilatation, when it may be employed to a greater extent; and in the course of a few days or weeks, as the case may be, a forced dilatation to the extent of an inch or an inch and a half may be used with impunity. After this it will only be necessary to use the dilator daily for two or three days, and afterwards at longer intervals, to keep the parts open till they permanently heal in the state of distension effected by the operation.

“Should any congestion or inflammation result, scarifying at the commissures of the labia will relieve by free bleeding, whilst, at the same time, the os tincæ is made to assume a more open, and, therefore, a more normal shape. I prefer, generally, to effect this by the repeated use of a small scimitar-shaped knife, as I find that by so doing the risk of inflammation is diminished, and it prevents cohesion of the cut sides of the labia uteri, both which accidents occasionally attend the operation when performed at once by a hysteatome. When preternatural shortness of the uterus, from original malformation, exists, the operation is contraindicated; also when stricture depends on endometritis; when, otherwise, metritis or metrocervicitis is present; when there are fibroid tumours causing inflammatory adhesions; when dysmenorrhœa is characterized by deciduous membranes; when there are conical hypertrophy and elongation of the cervix; when there is globular enlargement of the anterior labium uteri, embraced by the posterior lip in the form of a crescentic membrane; and when displacements and dislocations of the organ complicate the case—these and all other organic diseases which may attend this malady should be removed prior to the adoption of forcible extension by the dilator.”

72. *Treatment of Ovaritis.*—Dr. J. MATTHEWS DUNCAN divides ovaritis into acute and chronic. The acute form may end simply by resolution, or its termination may be complicated by perioophoric adhesions or abscess, or true ovarian abscess, or it may end in the chronic form of the disease. Chronic ovaritis may last for many years without the organ becoming fixed by adhesions, and without suppuration in its substance or in its immediate neighbourhood. One ovary only may be affected or both sides, and the disease may be limited to one or attack both alternately. The left ovary, he thinks he has observed, is more frequently the seat of disease than the right. He has seen it enlarged to at least three times its ordinary dimensions. The symptoms cognizable by the practitioner are sensitiveness, tenderness, degrees of hardness, enlargement, roughness of surface, and change of position. Ovaritis is frequently caused by the conditions of recent marriage, or may be produced by suppression of the menses from cold or other causes; it is often observed as a consequence of gonorrhœa; it occurs frequently during convalescence from abortion. It is less common after delivery at the full time. It is observed frequently after operations on the uterus, such as metrotomy and other dilatations of the cervix, and it is frequently found in cases where no evident cause can be assigned to it. Ovaritis occasions pain, which may be either slight or severe, acute or dull, in the region of the ovary, groins, back, sacrum, or down the thighs. It is not necessarily accompanied by suppression, or even any diminution, of the lochia or of the catamenial flow, nor by menorrhagia, though these symptoms may occur. Dr. Duncan does not believe that ovaritis is inconsistent with fertility, though it no doubt is a frequent cause of sterility. A woman suffering from ovaritis, acute or chronic, can rarely submit to sexual connection, on account of the pain it inflicts. Patients suffering from ovaritis often quickly assume evident outward appearances of depraved health, the dull eye, the pasty face, pallor, and anæmic look. Ovaritis is only to be made out exactly by a physical examination, the details of which are fully given in Dr. Duncan's paper. The prognosis should always be very guarded; for although many cases mend rapidly, many are very tedious. In the treatment the invaluable condition of rest of the affected organ cannot be maintained, the ovarian congestion attendant upon the maturation and bursting of a Graafian follicle coming to undo all that treatment may have effected. In chronic cases two, three, or four leeches may be applied through a glass speculum to the cervix uteri, and the bleeding from the leech-bites encouraged, if need be, by hot fomentation to the vulva. In some cases it may be preferred to apply a larger number of leeches over the inguinal canal. As in other chronic inflammations counter-irritation is here often useful. It is best effected by applying the irritant over the inguinal canal adjacent to the affected gland. A small extent of counter-irritation, say about two inches square, is sufficient. It may be produced by a croton oil liniment or antimonial ointment, or by keeping a blistered surface from healing. Instead of these forms of counter-irritation a seton may be used. The regulation of the bowels is important, and for this purpose the gentle salines are best adapted. Some patients derive advantage from the use of mineral waters, such as those of Kreuznach; others receive benefit from the waters of Homburg or of Kissingen. Iodine, bromine, and mercury may be used with all the care that is exercised in the administration of these remedies; in other chronic inflammations Dr. Duncan does not think the arrestment of leucorrhœa, especially by speculum and caustic, desirable, at least in an early part of the course of a case, and he has little doubt that this kind of treatment is occasionally a cause of ovaritis.—*Practitioner*, Dec. 1871, from *Edin. Med. Journ.*, Sep. 1871.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

73. *Toxical Studies on Chloral Hydrate*, by B. W. RICHARDSON, M.D., F.R.S.—The most important subject, in a toxicological point of view, which has recently been under discussion, has relation to chloral hydrate. The increasing employment of this narcotic by the members of the general public, without the advice of the professors of medical science, has been attended by several fatal occurrences; while in instances where fatal results have not taken place, peculiar symptoms have followed the frequent self-administration of the narcotic—symptoms of serious import, and demanding ready recognition. We have, consequently, devoted some labour to the investigation of certain facts bearing on the toxicological history of chloral hydrate, to which, and the results of our inquiries, we would now direct attention.

1. We have endeavoured to ascertain what is a dangerous and what a fatal dose of chloral hydrate. The conclusion at which we have been able first to arrive on this point is, that the maximum quantity of the hydrate that can be borne, at one dose, bears some proportion to the weight of the animal subjected to its influence. The rule, however, does not extend equally to animals of any and every class. The proportion is practically the same in the same classes, but there is no actual universality of rule. A mouse weighing from three-quarters of an ounce to an ounce will be put to sleep by one-quarter of a grain of the hydrate, and will be killed by a grain. A pigeon weighing twelve ounces will be put to sleep by two grains of the hydrate, and will be killed by five grains. A guineapig weighing sixteen ounces will be put by two grains into deep sleep, and by five grains into fatal sleep. A rabbit weighing eighty-eight ounces will be thrown by thirty grains into deep sleep, and by sixty grains into fatal sleep.

The human subject, weighing from one hundred and twenty to one hundred and forty pounds, will be made by ninety grains to pass into deep sleep, and by one hundred and forty grains into a sleep that will be dangerous.

From the effects produced on a man who had of his own accord taken a hundred and twenty grains of the hydrate, and who seemed at one period to be passing into death, we were led to infer that in the human subject one hundred and forty grains should be accepted as dangerous, and one hundred and eighty as a fatal dose. Evidence has, however, recently been brought before us which leads us to think that, although one hundred and eighty grains would in most instances prove fatal, it could, under very favourable circumstances, be recovered from.

Dr. Hills, of the Thorpe Asylum, Norwich, has, for example, favoured us with the facts of an instance in which a suicidal woman took no less than *four hundred and seventy-two grains* of the hydrate dissolved in sixteen ounces of water, and actually did not die for thirty-three hours. Such a fact, ably observed as it was, is startling; but it does not, we think, militate against the rule that one-hundred and forty grains is the maximum quantity that should, under any circumstances, be administered to the human subject.

2. A second point to which our attention has been directed is, what quantity of hydrate of chloral can be taken with safety at given intervals for a given period of time, say of twenty-four hours. To arrive at some fair conclusion on this subject, we calculated from a series of experiments the time required for the development of symptoms from different doses of the hydrate, the full period of the symptoms, and the time when they had entirely passed away. Great difficulties attend this line of investigation; but we may state, as a near approximation to the truth, that an adult person who has taken chloral hydrate in sufficient quantity to be influenced by it, disposes of it at the rate of about seven grains per hour. In repeated doses, the hydrate of chloral might therefore be given at the rate of twelve grains every two hours for twenty-four hours, with less danger than would occur from giving twelve times twelve (144) grains at once; but we do not think that amount ought, except in the extremest emergencies, to be exceeded, in divided quantities.

3. A third point to which we have paid attention is, the means to be adopted in any case when, from accident or other cause, a large and fatal dose of chloral hydrate has been administered. We can speak here with precision. It should be remembered that this hydrate, from its great solubility, is rapidly diffused through all the organism. It is in vain, consequently, to attempt its removal by any extreme measures after it has fairly taken effect. In other words, the animal or person under chloral, like an animal or person in a fever, must go through a distinct series of stages on the way to recovery or death; and these stages will be long or short, slightly dangerous or intensely dangerous, all but fatal or actually fatal, according to the conditions by which the animal is surrounded. One of the first and marked effects of the chloral is reduction of the animal temperature; and when an animal is deeply under the influence of the agent, in the fourth degree of narcotism of Dr. Snow, the temperature of its body, unless the external warmth be carefully sustained, will quickly descend seven and eight degrees below the natural standard. Such reduction of temperature is itself a source of danger; it allows condensation of fluid on the bronchial pulmonary surface, and so induces apnœa, and it indicates a period when the convulsion of cold (a convulsion which sharply precedes death) is at hand.

We offer these explanations in order to indicate the first favourable condition for the recovery of an animal or man from the effects of an extreme dose of chloral hydrate. It is essential that the body of the animal be kept warm, and not merely so, but that the air inspired by the animal be of high temperature. The first effort to recovery, in short, should consist in placing the animal in a warm air. This fact is perfectly illustrated by experiment on the inferior animals. In the pigeon an air of 95° Fahr. is most favourable, in the rabbit an air at 105° to 110°, in the dog the same. In man the air to be breathed should be raised to and sustained at 90° Fahr. at least.¹

The next thing to be remembered in the recovery of persons under the fatal influence of chloral hydrate is to sustain the body by food. I find that even under deep sleep from the narcotic, although the process of waste is less than is common under natural conditions of rest, there is still a very considerable waste in progress, which, if not made up, is against recovery. I find also that the digestive and assimilating powers, though impaired during sleep from chloral, are not arrested, but may be called into fair action with so much advantage, that if two animals be cast into deep sleep by an excessive quantity of the narcotic, and one be left without food and the other be artificially fed on warm food, one-fourth of the chance of recovery is given to the animal that is supplied with food. In the human subject warm milk, to which a little lime-water has been added, is the best food. Milk is very easily administered mechanically, and it should be administered in the proportion of half a pint every two hours.

4. The fourth point to remember is to sustain the breathing; in the inferior animals the question of life or death can be made to turn on this pivot. But the artificial respiration must be carried out with great gentleness; it must not be done by vehement movements of the body or compressions of the chest, but by the simple process of inflating the lungs by means of small bellows, through the nostrils. We have devised in the course of our researches various instruments for artificial respiration, viz., a small double-acting bellows, a small syringe, and a double-acting India-rubber pocket-bellows; and we have lately made an instrument which acts by a simpler method still, *i. e.* we merely attach to a single hand-bellows a nostril-tube, and gently inflate the lungs, letting the elasticity of the chest-wall do the work of expiration. A little valve near to the nostril tube effectually stops all back currents from the lungs into the bellows. For the human subject, five charges of air from the bellows should be given at intervals of five seconds apart.

¹ We have no doubt it will be found, as the chronicle of deaths from chloral hydrate increases, that the mortality from the agent will be the greatest when the thermometrical readings are the lowest, and *vice versa*.

The symptoms of acute poisoning by chloral hydrate are, briefly, profound coma, great muscular relaxation, apoplectic breathing, and flushing of the face and neck, with intermissions of pallor. The eyes are usually rolled upwards as under chloroform, and at times, as impressions of motion are made on the surface of the body, there is muscular tremor, which may pass into convulsion. In time the extremities become cold, and the bronchial surface becomes charged with frothy mucus, which greatly impedes the breathing and hastens the final result.

The chronic symptoms of chloral poisoning are—sleeplessness, unless the narcotic be taken in very large doses; great mental irritability and muscular prostration; uncertainty of movement, with tendency to fall forward; caprice of appetite and frequent nausea. In some cases there is injection of the conjunctivæ, and in other cases yellowness. The urine in extreme cases contains albumen, and the bowels are commonly constipated, the evacuations being white and hard. Chloral hydrate does not produce the ecstatic dream or delirium caused by opium or haschisch; on the contrary it causes, through all the stages of its action, a sense rather of depression than of elevation of mental faculty.—*Brit. and For. Medico-Chirurgical Rev.*, Jan. 1872.

74. *Recovery after Swallowing One Hundred Grains of Chloral.*—Mr. B. BROWNING records (*Brit. Med. Journal*, Dec. 2, 1871) the following case of this: An anæmic middle-aged woman while suffering from facial neuralgia, swallowed at one draught a recently prepared syrupy solution of chloral hydrate, which contained over 100 grains of that drug. She immediately complained of "intense burning pain in the throat, gullet, and stomach;" and when I saw her (about three-quarters of an hour subsequently), she was screaming and almost convulsed with agony—so much so, that it was with the greatest difficulty she could be restrained from throwing herself out of her bedroom-window into the road. Her pulse was small and very rapid; the countenance was livid and bathed in sweat; an odour of chloroform was plainly perceptible in the breath, and no trace of narcotism had been observed, even for a moment. After an ineffectual attempt to bring on vomiting, I injected hypodermically half a grain of morphia over the epigastrium, and directed milk to be freely given. On visiting her in three hours' time, I found her somewhat relieved and accordingly injected another half grain of morphia, and suggested the cautious use of stimulants with the milk. On the following morning she was free from all pain of any description, though very weak, and has since done well; a slight return of neuralgia being at once checked by another employment of the hypodermic syringe and ferruginous tonics.

The usual hypnotic effects of the chloral were here "conspicuous by their absence" from first to last; no drowsiness even, much less sleep, having set in during the period of its elimination from the system; yet in a previous neuralgic attack, twenty grains only had procured a good night's rest for this person. I can vouch for the amount, as well as the goodness, of the chloral taken by her; and think that, as deaths have been reported after the administration of 60, 45, and even 25, grains of this remedy, she may be deemed fortunate in escaping so readily.

75. *Poisoning by Strychnia successfully treated by Chloroform Inhalations.*—We find in *Le Mouvement Médical* (Dec. 3, 1871), a report of a case, taken from the *Gaz. Med. de Torino*, in which a man took with suicidal intent three grains of strychnia. Violent convulsions followed, which were relieved by the inhalation of chloroform. Whenever this was stopped the convulsions recurred. By persisting in this treatment the patient entirely recovered.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Malignant Hemorrhagic Smallpox; Recovery. By WM. T. TAYLOR, M.D., of Philadelphia.

Dr. Collie remarks (*Lancet*, Dec. 1871) that "this form of the disease is invariably fatal," and such is the general opinion, but the following case proved an exception.

Mrs. R. E., æt. 39, the mother of four children, was taken sick December 10, 1871, with soreness over the whole body, headache, and great pain in the small of the back, attended with sick stomach and frequent vomiting.

13th. Pain in back abated and an eruption resembling "prickly heat" appeared on the face and arms which had extended over the body by the next morning, when I was called in. She then had fever, headache, redness of the conjunctiva, sore throat, and great thirst. Having taken a dose of castor oil on the previous day, her bowels had been moved freely, and the stools were mixed with blood. She was nursing an infant eight months old, unvaccinated. She had been vaccinated in infancy, but her vaccine scar was scarcely perceptible. The babe was removed and vaccinated. As the sanitary condition of the house was unfavourable, and she could not be properly cared for at home, I advised her removal to the hospital, but she and her husband refused. I ordered her a tablespoonful every two hours of the following mixture: Potas. citras ʒij; spt. nit. dulc. ʒij; tinct. opii comp., elix. ammon. valer., aa ʒss; liq. limonis ʒij; aq. camphor. ʒij.

15th. Papules changed into vesicles on the face and arms. As she was very thirsty, I ordered milk with eggs, sweetened, to be used freely, but she took them very sparingly, complaining that the milk filled her throat with slime and caused her to be constantly expectorating. On the following day her throat became very sore, and she could barely swallow milk, which she refused unless largely diluted. Her face began to swell, and the eyelids soon closed. She expectorated bloody mucus, and her stools were frequent, being tinged with blood.

17th. Vesicles flat, filling with blood, extending over the whole body, from the size of a pea and smaller to some one inch in diameter, whilst on the hands there are large bloody blebs. I ordered brandy and milk, with beef-essence, and a teaspoonful every two hours of the following mixture: Quin. sulph. gr. xij; tinct. ferri chl. ʒss; syrupii ʒj; aq. menth. pip. ʒss. Of this she took two doses and then refused to take more.

18th. Wildly delirious, requires constant watching to keep her in bed; once during a momentary absence of her husband she attempted to get out of the window. Much oppressed in her breathing; voice husky; throat and fauces dry, so that she can scarcely swallow.

19th. Face still continues swollen; tongue dry; blood spots cover the body; constant jactitation. Refused the milk-punch, but will swallow a little brandy and water. Her condition appears hopeless.

20th. Condition unchanged; still delirious; passes her urine in the bed. At midnight was so greatly prostrated that her death was expected at any moment, but I was greatly surprised to find her living the next morning, and although the purpuric spots covered the whole surface of the body,

yet they were beginning to dry on the face, and the swelling was subsiding, To-day she took some coffee and milk with brandy and water.

22d. She recognized me this morning and appeared quite rational, answering my questions intelligently, saying she "feels good." Desiccation is going on rapidly over the face and arms, but the purpuric character of the disease is still apparent over the body and legs. She takes brandy and water and soup. Drs. Thos. J. Yarrow and Emory Eshleman, who saw the patient with me to-day at my request, freely corroborate my views as to its malignant hemorrhagic character, and the unfavourable condition of the house.

25th. Eruption drying rapidly on the face and is desquamating, but the skin is peeling from the hands. Has a slight cough and hoarseness, which yielded readily to mist. glycyrrh. comp. Appetite good, and she took some chicken soup.

27th. Brown appearance of spots still apparent on the legs and body, resembling "blood-blisters" when dry. Desquamation going on rapidly, but patient complains of sore throat, which was relieved by an infusion of sumac berries and chlorate of potash. As she feels weak, I ordered her a teaspoonful three times a day of the mixture of quinia and iron which had been previously ordered and not administered.

January 1, 1872. Is now perfectly well and has returned to her domestic duties, having really escaped from the "jaws of death." All the family had been vaccinated, and not one of them was affected with smallpox.

Case of Monstrosity. By B. SCHERMERHORN, M.D., of Buskirk's Bridge, New York.

I was called, January 31, 1872, to see Mrs. P., mother of nine healthy children, said to be in labour. I had attended her before, and she had told me that she had always been delivered before the doctor's arrival. This I found to be the case on the present occasion. The child was born just as I drove up to the house. I immediately tied and cut the cord, and discovered that it was not a perfect child. After attending properly to the mother, on examination of the child I found it to be a female, weighing about four pounds; deformed, having but one eye, situated in the space between where the two eyes usually are; there was no nose; there was a pendant growth about an inch in length and an inch and one-half in circumference, attached to the forehead immediately above and overhanging the eye. There were also two similar but smaller growths attached to the little finger of each hand. In other respects the child seemed well formed. It never, however, made any crying sound; neither could I discover by the hand laid over the præcordial region that the heart beat.

DOMESTIC SUMMARY.

Menstrual Pelvi-Peritonitis.—Dr. THEOPHILUS PARVIN relates (*American Practitioner*, Dec. 1871) two interesting cases of this disease, and adds the following remarks on its diagnosis and therapeutics:—

"The *diagnosis* of menstrual pelvi-peritonitis will depend, in the first place, upon some obvious menstrual disorder. This disorder existing, we determine simply the etiology of the affection, and further investigations will be into the symptoms of the inflammatory affection in general. *Pain* is the most salient phenomenon of peritonitis. 'This cry of alarm' is in serous membranes highly characteristic.

"A patient with pleuritis describes his sufferings as if a sharp knife were thrust into his side. He hesitates to move, to cough, to take a full inspiration, to do anything which will put the intercostal muscles of the affected side in action. So, too, a woman with pelvi-peritonitis will complain of a pain similarly intense and sharp. Instinct insists not only upon general rest, but also upon local rest, and she lies down on her back, with the limbs drawn up, to relax the abdominal muscles. The pain is in the hypogastric, or in one or both iliac regions, or in all three, and often irradiates over the abdomen, or extends down the inner and upper portion of one or both limbs. Conjoined with pain are tenderness on pressure, and a sensation of fulness or distension in the lower part of the abdomen. Often there is great irritability of the bladder, and micturition is not only frequent, but difficult and painful. Comparatively seldom the rectum is disturbed; though later on in the disease, if the tumour formed should be retro-uterine, it may be very irritable. Nausea and vomiting quite commonly mark the onset of the disease; and as the latter is frequently of 'bilious' matter, and as there may be pain in the right side extending to the liver, and as there is fever, often preceded by a slight chill or chilliness, the disorder is at first sometimes mistaken in malarial regions for an attack of remittent fever.

"The formation of a tumour or tumours in one or more of the vaginal cul-de-sacs is a marked characteristic of this form of inflammation. The tumour may generally be found within a week after the onset of the disease, and before this the sac which is to be invaded by this swelling will be more sensitive to pressure, and less elastic than natural. 'This sensation of a tumour, which is recognized in one or more of the vaginal cul-de-sacs, is so much more interesting to study, as this sign in pelvi-peritonitis is the analogue of the dulness, or rather the analogue of the deficiency of elasticity on percussion which is found in pleurisy, and as the dulness furnishes one of the most important elements of diagnosis. . . . The tumour is in juxtaposition to the uterus, not part of it, and thus is distinguished from enlargements, partial or general, which that organ may have. It is separated from it by a furrow or sulcus, sometimes very distinct, at others slight; and then it is by the difference of level, of consistence, and of elasticity, and by its special configuration, that it is to be distinguished.' (Bernutz.)

"Another point to be observed in making a diagnosis is the appreciation of 'the displacements, versions or flexions, and rotations which the uterus has undergone,' consequent upon the tumour or tumours encroaching upon its normal position, or, further on in the progress of the disease, from inflammatory adhesions.

"Finally, not to prolong the consideration of this topic, an exacerbation of inflammation, a '*recrudescence*,' is no uncommon event in pelvi-peritonitis at the accession of the usual monthly periods, especially if the menstrual flow either fails to appear or is scanty.

"In the therapeutics of this disorder few remedies are required, yet these used intelligently are wonderfully efficient. The first of these I would mention is local depletion by leeches. Where it is possible, the leeches should be applied directly to the neck of the womb; but when the vagina is so swollen or sensitive that a speculum cannot well be introduced, then their application should be made to the lower part of the abdomen, and at least three times as many should be used; for Bernutz justly observes that four leeches to the cervix accomplish more in depleting the inflamed part than a dozen used externally. The leeching may be repeated on the second and on the third day, if there has been no material improvement in the disease. About the third or fourth day a large camphorated blister,¹ occupying at least a third more than the sensitive portion of the abdomen, will be found useful if the symptoms are not yielding

¹ Smaller blisters upon one or the other iliac regions, as may be indicated, the blistered surface being dressed with morphia, will subsequently be found useful to dissipate the cruel neuralgic pains which in many cases are present after all inflammatory symptoms have subsided. So, too, small blisters similarly applied are useful in hastening the resolution of the tumour when this process seems to be slow or arrested.

readily to the previous depletion. Internally, no remedy is so important as opium. Indeed many cases of pelvi-peritonitis will make good recoveries under it alone. I am in the habit of giving the opium, in combination with quinia and the extract of conium, in the proportions previously mentioned. No one need withhold it for fear of constipating the bowels. This should be desired rather than feared. There are no "peccant humours" to be purged away, and *rest* for the whole body, the intestinal canal included, is a most important element in the successful treatment of the disease. Once in four or five days is often enough for an evacuation from the bowels; and when this does not occur spontaneously, a copious injection of warm water, especially when thrown high up in the bowel by means of a long tube, will generally have the desired effect. If any laxative is administered by the mouth, it should be one of the milder salines, and then only as an efficient preparation for the better action of the enema, which should succeed it in three or four hours. At the approach of a monthly period efforts should be made to secure a free discharge. These failing, when the menstrual *molimen* is manifest, two or three leeches to the neck of the womb will be of great advantage.

"Warm hip-baths after the acute stage of the disease has passed are often exceedingly agreeable to the patient, and are of some value in lessening the long-lingering soreness in the lower part of the abdomen.

"Of course, too, once this acute stage is passed, the practitioner will give suitable attention to any condition of the womb which may have been the cause of the menstrual disorder. An endo-metritis, a flexion, narrowing of the cervical canal, etc., may require to be cured before the patient can be assured against similar attacks at other monthly periods.

"It is important that the patient should be warned against an early resumption of her ordinary avocations. Better too prolonged rest than too early exercise. Probably no well-marked case of pelvi-peritonitis recovers entirely, under the most favourable circumstances, in less than six weeks or two months. The *abdominal corset* previously mentioned, or some similar bandage, will be found in many cases of great advantage, enabling patients to sit up and walk without discomfort, when not wearing it their suffering would be acute at every movement or jar. Whether, as Bernutz teaches, his bandage *immobilizes* the uterus, or whether it lifts upward and backward the abdominal viscera, so as to prevent so much pressure upon the recently-inflamed pelvic peritoneum, there can be no question as to its great utility.

"It will be observed that in the enumeration of therapeutic agents in this disorder no mention has been made of mercurials. I believe that calomel, or any other mercurial, administered as a cathartic, is decidedly injurious, and that the supposed antiphlogistic action of small doses is unnecessary. Opium is enough."

The Length of Time an Ovum may be retained after Death of the Fœtus.—Dr. JACOBI exhibited to the New York Obstetrical Society, March 7, 1871, a specimen showing the length of time an ovum may be retained in utero after the death of the fœtus. Last December (1870) Dr. Guleke was called to see a woman who said she was five months advanced in pregnancy—she ought now to be in the eighth month—but forty-eight hours ago, after the usual labour-pains, she expelled an entire ovum, much shrunken in appearance. The placenta was pretty well formed, but in a state of fatty degeneration. It was evident from the appearance of the surface of the placenta, that its attachment to the uterine wall had but recently been disrupted. The fœtus was apparently but ten or eleven weeks old. The ovum was retained about five and a half months after the death of the fœtus. No hemorrhage followed the expulsion of the mass. Dr. Jacobi said the longest time he had ever seen an ovum of this size retained after death of the fœtus was seven months. He now has a lady under observation, who, when at the third month, was taken with flooding; on examination he could feel the ovum, but made no attempt to remove it, as he considered it to act as a plug preventing further hemorrhage; the os closed, and the cervix resumed very nearly its former length, though it was a little softer and larger than in the unimpregnated state; the uterus is now slightly anteфлекed, the ovum is still retained, and the uterus has not in-

creased in size during the last three months; the woman is in good health and does not menstruate.

Dr. NOEGGERATH said it not unfrequently occurs that the entire ovum may be retained a number of months after death of the fœtus, though more frequently a part of the afterbirth or decidua is retained. He has seen two instances which show how long a part of the placenta may remain without being detached. He is now treating a lady who aborted six years ago at the third or fourth month. The physician in attendance thought the ovum did not come away entire, the patient had considerable flooding at the time and made a slow recovery, and when menstruation became re-established she suffered from severe menorrhagia. Some time after she again became pregnant, went to full term, and was safely delivered, the secundines being removed entire. After getting up she still thought she had uterine trouble, as she suffered from bearing-down pains, menorrhagia, and metrorrhagia. Her physician advised her to go to Europe, where she was under the care of a prominent gynecologist in Berlin, who said a latero-version existed, as also a granular erosion of the cervix uteri, which condition he considered sufficient to account for her hemorrhage, anæmia, etc. While in Berlin she wore a stem pessary, with some relief to her symptoms. On her return to this country she again had severe metrorrhagia and sent for Dr. Noeggerath, who found some catarrh, a slight erosion, and latero-version; the uterine canal measured one inch longer than normal. This condition of affairs would be called imperfect involution, a state which Dr. Noeggerath believes never to exist unless it is connected with some trouble of the lining membrane of the uterus. Accordingly he used sponge-tents to dilation, and on introducing the finger he felt something like large granulations at the fundus; by scraping he removed two pieces as large as peas, which proved by the microscope to be old villi and degenerated decidua. Dr. Noeggerath feels certain, from the microscopic appearance of the old villi, which were covered with epithelium, that the masses removed were retained in the uterus during the second gestation, and that they were the remains of that portion of the fœtal envelopes which were retained at the time of the abortion six years ago.

Dr. Noeggerath said a second variety of retention occurs in which the secundines are expelled entire and the fœtus remains. He related the following case: A lady came to him saying that she aborted at the third and a half month, and that the physician who was present said that the fœtal envelopes came away, but there was no fœtus expelled. She, however, had no trouble following the abortion, but came to Dr. Noeggerath to find out whether the fœtus was retained or not. On examination Dr. N. found the uterus retroflexed, and the canal larger than normal. In order to bring about menstruation he ordered cold douches, as the uterus seemed relaxed. About four weeks after she expelled a fœtus, entire and perfect in form.

Dr. CHAMBERLAIN mentioned a case which was related to him by a physician whose wife aborted at the third month. The membranes were discharged, but diligent search failed to discover the fœtus. The patient had continuous hemorrhages and suffered from puerperal phlebitis of the lower extremities. Twelve weeks after the expulsion of the membranes a three months' fœtus was expelled in a state of partial decomposition.

Dr. PEASLEE said he presented a case two years ago to the Pathological Society, where seven months elapsed before the ovum was expelled. The patient flooded at the third month, after which there was no increase in the size of the uterus; the husband of the patient was away during the four months previous to the expulsion of the ovum. Dr. P. had seen eight or ten cases where no fœtus could be found on opening the membranes; most of these cases, however, were not older than the ninth or tenth week. There are cases where the placenta retains its vitality indefinitely. He remembers a case like that related by Dr. Chamberlain, in which the membranes were expelled, the patient having many hemorrhages subsequently, and at last went into a typhoid state. Dr. Peaslee was then asked to see her in consultation. On examination he found his finger would easily enter the os, and by pressing high up he detected a mass which he withdrew and found to be a three months' fœtus, which had been retained in all about three months after the expulsion of the membrane.—*Am. Journ. Obstetrics*, Nov. 1871.

Fracture of Second Lumbar Vertebra, etc. ; Trephining ; Death.—Dr. E. R. WILLARD, of Wilmington, Ill., records (*Chicago Med. Examiner*, Oct. 1871) the following interesting case of this:—

Oct. 5th, 1869, four men stepped upon the cage at the top of the shaft at a coal mine for the purpose of descending into the pit, a distance of one hundred and ninety-five feet. As the engineer started the machinery for lowering the cage, the rope broke, precipitating the cage and men to the bottom, instantly killing one man, producing compound comminuted fracture of the leg of the second, slightly injuring the spine of the third, while the fourth received a severe blow upon the lumbar vertebrae, causing paralysis of the lower extremities. Pins thrust into the skin at any point below the seat of injury gave not the slightest sensation of pain.

The attending physician, Dr. McMann, of Gardner, thinking the case a capital one to try "Clines's Operation" of relieving the compression of the spinal cord by cutting down upon the injured part, and sawing through the lamina sufficiently to elevate the depressed portion of bone, immediately telegraphed for me to meet him in consultation. Upon arriving I learned the above facts, and after a careful survey of the case, notwithstanding the want of success hitherto attending the operation, I advised its immediate performance. So soon as the necessary arrangements were completed, we made an incision about six inches in length, through the integument over the seat of injury, and separated the muscles upon either side of the spinous processes sufficiently to ascertain the extent of injury. This done, we discovered the second lumbar vertebra fractured through the lamina, and the spinous process driven in upon the cord, and so wedged as to be perfectly immovable with the tooth forceps. Hey's saw was applied, and the lamina divided upon either side, and the process elevated, when the spinal cord was found to be so completely contused and lacerated as to entirely obliterate its functional activity.

The wound was properly dressed, the water drawn as occasion required, and the bowels attended to whenever necessary. The patient survived the operation ten days.

Colourless Tincture of Iodine.—The usual method of preparing this is by adding successive portions of aqua ammoniæ to the common tincture of iodine until the colour disappears, *i. e.*, until all the iodine has entered into combination with the ammonia. A writer in the *Chicago Druggists' Price Current* suggests as a much more elegant and accurate method, to dissolve at once the iodide of ammonium in dilute alcohol. This will give, it is said, a tincture free from any excess of ammonia or iodides, and be more economical.

Spontaneous Generation.—The *New York Medical Journal* for February last contains an interesting article on this subject by Prof. J. C. DALTON, in which the author gives the history of our knowledge on spontaneous generation. Prof. D. concludes that now, as always, the idea of spontaneous generation of living beings is confined to organisms of which we know the least. Exactly where our definite knowledge fails, owing either to the minute size or the imperfect organization of these bodies, there commences the obscurity which hangs around their origin. It is very justly said, in support of their spontaneous generation, that, if this mode of production exist at all, it is precisely in the case of the simplest and most imperfect organisms that we should expect it. We might imagine a bacterium or a monad to originate in this way, but not an eagle or an elephant. On the other hand, it is alleged that the imperfect organization of these minute forms is only apparent, and depends on the imperfection in our means of observation. When our microscopes and other aids to investigation have been still further improved, we shall find, it is said, that the bacterium and the vibrio possess an organization of their own, not less essential and complete in its way than that which we now know belongs to the ciliated infusoria. There is every evidence that at least their regular and normal mode of production is from germs disseminated in the atmosphere; and they themselves, as we have already seen, are embryonic or transitional forms in the development of a distinct vegetable growth. They are consequently to be regarded as an inte-

gral part of the cryptogamic vegetable organizations; and, notwithstanding the apparent simplicity of their structure, they no doubt, like other plants and animals, have their definite place in the organic world.

Meat, its Nourishing Properties, etc.—The number of the *Amer. Journal of Pharmacy* for March contains an interesting article on this subject by H. ENDEMANN, Ph.D. The author, to avoid any omission in the enumeration of the component parts of meat, groups all of them together under the general heading "Products of the Decomposition of Albumen."

"Meat consists of fibrin and albumen (about 25 per cent.) and the rest of its solid constituents (about $2\frac{1}{2}$ per cent. in the average) is composed of the products of decomposition of albumen and of alkaline salts. The albuminous substances, fibrin and albumen, represent the nourishing properties of meat, while the salts, possessing likewise nourishing qualities, are important for the promotion of digestion. About twenty years have elapsed since Liebig made his first investigations on the constituents of meat. It was then also that he advanced his views concerning the nourishing properties of the extract of meat, and we find in the "*Chemische Briefe*," published shortly afterwards, his ideas set forth so clearly that the unprofessional reader may understand and duly appreciate them.

"I feel confident that the value of this extract was and is, even now, overestimated. Liebig himself abandoned the idea that the organic constituents of the extract were the agents of its beneficial effects, and experiments, made some years ago in England, show plainly that the ashes of the extract are capable of producing the same effects as the extract itself. Even now, however, after the explosion of the theories that albuminous substances might be built up again from the products of their decomposition, experiments are constantly made to find organic constituents capable of producing the effects of the extract itself, as is evidenced by the recent discovery of carmine, the physiological effect of which is, according to the experiments, more than doubtful. Liebig states that 'the extract, which is produced by extracting meat by cold water, is the nourishment for the muscle;' but the meat liquor is not only the agent of transmitting the nourishment from the blood to the muscles, it also contains the waste products formed during the action of the muscles. Liebig in preparing his extract, however, excludes the real nourishment by coagulating it, and carefully collects the products of decomposition for the good of humanity.

"But, if the alkalies alone constitute the value of this extract, is there not a waste of most valuable material? The interest of the manufacturer will not be disputed, but why does the intelligent consumer pay dollars for that which he might buy for a few cents?

"The fact is, that the public is as yet in the dark; the published experiments are known in most cases only to scientific men and command attention, while the want of support by illustrious names makes them soon forgotten. For the proper utilization of meat, the albuminous as well as the extractive portion must be preserved, for the former not only resupplies the body with albumen, which had become decomposed by the action of the muscles, but serves also as a combustible, while the extractive portion is necessary for a proper digestion. Let us see how these requirements are fulfilled by the methods in vogue for the utilization and preservation of meat.

"When meat is salted, it is treated with an excess of salts (common salt and saltpetre), which absorb the water, forming a concentrated solution, which contains besides these salts much of the extractive portion of the meat. This solution is removed before using the meat, and the latter is even soaked in fresh water for some time, to remove the excess of salts. It is evident that such meat is very poor in extractive salts, and for this reason very difficult to digest.

"The action of smoke depends upon the carbolic or cresylic acid contained therein. These substances coagulate the albumen and fibrin, and thus prevent decomposition. Smoked meat is, therefore, not so easily digested as raw beef, since not only the gastric juice must remove the carbolic acid before digestion

is possible, but the albumen and fibrin, being already coagulated, will resist more strongly the dissolving action of the juice. The conditions will be even more unfavourable for a proper digestion, if the salting and smoking process have been combined.

"One of the most rational of processes of modern invention is the preservation of meat by inclosing it in air-tight cans. This process would undoubtedly give full satisfaction, if it were not for mechanical difficulties, which cannot as yet be surmounted. If properly carried out, however, it is the best process known, because it furnishes the meat in its pure and unadulterated state, the great agent of decomposition, atmospheric air, being excluded.

"When we come to consider the different agents of decomposition, we find that they are, first the atmospheric air with its myriad germs and spores, and secondly water. No decomposition is possible without the latter, and I propose, therefore, the following method of preservation: The meat, after having been cut in slices, should be dried in a hot air-chamber, at a temperature below 140° Fah. If the apparatus is well constructed, the drying may be completed within three hours, if filtered air be drawn rapidly through the chamber.

"In this operation the meat becomes quite hard, and can easily be ground in a mill. It is then in the condition which is best adapted for use. The fibrin and albumen, not being coagulated, are able to take up water, and the fibres expand into their natural state.

"The powder is of a slight brownish-yellow colour; has a trifling odour of roast meat, and keeps exceedingly well. This proves that the salts contained in the meat are entirely sufficient for its preservation, if the quantity of water keeping them in solution is greatly diminished by evaporation.

"Its use is easily understood. For beef soup—two ounces of the powder are boiled for a few minutes with one pint of water and the other usual ingredients. The soup thus prepared will be stronger than that prepared from half a pound of fresh meat, for a solid piece, even after long boiling, will never permit as thorough extracting as the meat powder.

"For solid roast meat dishes, the addition of one egg to a pound of meat powder, together with the requisite quantity of water, suffices to reunite the separated fibres by means of the coagulating egg-albumen.

"The fact that the albumen and fibrin are not coagulated, makes it a valuable medicine for consumptives, and in all cases of debility where good nourishment is requisite. It is even more easily digested than raw meat, for the reason that, if it is taken with cold or lukewarm water, the process of swelling will take place in the stomach, where, being surrounded by gastric juice, the latter is absorbed.

"This I have tested by actual experiment. Corresponding quantities of raw meat and meat powder were digested in glass flasks, under the influence of equal quantities of diluted muriatic acid and pepsin, at a temperature of about 110° Fah. While the contents of the vessel containing the meat powder, after six hours' treatment, represented a uniform, though not quite clear fluid, the vessel containing the raw beef contained yet pieces of the undigested material. A dog was fed for eight days with a daily ration of five ounces of meat powder, corresponding to about one pound of fresh meat. The average weight of the discharges from the rectum was about one-fourth ounce daily (dried at 200° Fah.), the maximum being 8.5 grms., the minimum 5.2 grms. Microscopical examination did not show even traces of undigested meat fibre. The only part of the meat found undigested were the relics of the sinews. Pieces of wood, cork, paper, and threads of the carpets formed, besides the mucous membranes and constituents of the bile, the solid part of the excrements. The dog, who had formerly been fed on mixed food, grew very lively during this treatment. His weight at the end of the treatment was 12½ pounds."

Fraudulent Diploma Traffic.—The Legislature of Pennsylvania in January last appointed a committee "to investigate the facts concerning the alleged corrupt issuing of medical diplomas by any medical college existing under the laws of this State." This committee, on the 20th of March last, presented a report, from which we make the following extracts:—

"The institutions in regard to which inquiry has been made are the University of Pennsylvania, the Jefferson Medical College, the Philadelphia University of Medicine and Surgery, and the Eclectic College of Medicine, all of which are located in the city of Philadelphia.

"In regard to the two first named institutions, the University of Pennsylvania and the Jefferson Medical College, your committee feel bound to report that a full and careful inquiry has developed no cause for suspicion that either the trustees or faculty or any member thereof have in any way been concerned in the unlawful issue of medical diplomas or the improper issue of what are termed 'Honorary Degrees.' On the contrary, the concurrent and uncontradicted testimony shows conclusively that persons connected with these institutions have, from the commencement of this nefarious traffic in diplomas and degrees, used all proper means both to expose and prevent the same, thus fully justifying the high estimate placed upon these institutions and affording new proof of their just title to public confidence and esteem.

"The other institutions, which at present are known by the names of the Eclectic Medical College and the Philadelphia University of Medicine and Surgery, seem to owe their corporate existence to some very complicated and mysterious legislation." * * *

"An examination of many witnesses has convinced your committee that the Philadelphia University of Medicine and Surgery, under the management of Dr. William Payne [Paine?], and the Eclectic Medical College, under the management of Dr. John Buchanan, have for a long time openly engaged in the sale of diplomas to persons who had not attended even a practical collegiate course, and who in many instances were without any medical or scientific attainments whatever.

"It is in evidence that Dr. Payne made an agreement for the sale of diplomas, for the consideration of \$200, conferring the degrees of M.D. and LL.D. to a person of whom he knew nothing except the name, and that in pursuance of this arrangement said diplomas were regularly made out and signed. The person named in this instance is stated to have been an infant but two years old. It was also proved that Dr. Payne entered into an agreement with other parties to furnish diplomas for sale. In many instances there was positive proof that he had issued the diplomas of the Philadelphia University of Medicine and Surgery for a consideration to persons who had never attended any course of instruction, and to others who had only attended a few lectures in the course, and almost invariably without requiring an examination of the person so graduated, or the writing of a thesis.

"In a number of cases witnesses testify to having received meritorious degrees in medicine, without study, examination, or even payment. An examination of the books of the Philadelphia University of Medicine and Surgery discloses the fact that many *honorary degrees* from that institution were disposed of for money, the entries stating specifically the amounts paid for such degrees, and the names of the persons to whom they were sold.

"The testimony concerning the illicit traffic in diplomas by the Eclectic College of Medicine, under the management of Dr. John Buchanan, developed some most astounding facts connected with the management of this institution. It appears to be notorious that the sale of degrees by this college was carried on openly and systematically. Diplomas from this college, in regular form, and signed by the faculty, have been granted to women who could not even tell the location of the college; and there is abundant testimony of the sale of degrees to persons who never attended any of the lectures of the course, or received any medical instruction whatever. One of the faculty testified before the committee that, during the time he filled an important chair in this college, he visited a distant portion of the State for the purpose of ascertaining who among the practising physicians of that locality were without diplomas, with the intention of selling them degrees for whatever sum could be obtained.

"Your committee feel bound to report that this illicit and disgraceful traffic in diplomas by the two colleges above named has brought the medical profession of the State into disrepute, and has done great injury to the character and standing of the University of Pennsylvania and the Jefferson Medical College.

Several members of the faculty of the institutions testified that they are constantly in receipt of letters from distant parts of the country and from England, inquiring upon what terms and conditions diplomas could be purchased, and a number of these letters were produced before your committee, copies of which will be found among the notes of testimony herewith submitted.

"It seems to have been the design of those engaged in the nefarious business to create the impression that they really represented the University of Pennsylvania at Philadelphia, and hence their endeavours, by frequent legislation, to obtain such names as would be likely to be mistaken for it. It is certain from the testimony adduced that both the Eclectic College of Medicine and the Philadelphia University of Medicine and Surgery sold many scholarships to persons who supposed they were purchasing the scholarships of the University of Pennsylvania, and that in no known instance was the error corrected when the student discovered the mistake.

"In view, therefore, of the clearly established fact that both the Eclectic College of Medicine and the Philadelphia University of Medicine and Surgery have abused the trust confided in them by the Legislature by their several acts of incorporation, by selling their degrees to persons who had not attended the regular course of instruction, or were in any manner entitled to hold diplomas from a chartered college, and that their existence as incorporated medical institutions is productive of great disgrace to the medical profession and surgery of the community, we respectfully recommend the passage of a law repealing all former laws incorporating said institutions."

We have great pleasure in stating that the Legislature, to its great honour, has unanimously passed a bill repealing all former laws incorporating the guilty institutions above named.

UNIVERSITY OF PENNSYLVANIA.

MEDICAL DEPARTMENT.

NINTH STREET ABOVE CHESTNUT, PHILADELPHIA.

Spring Course of Lectures and Clinics for 1872.

THE Session will begin Monday, April 1, and continue until June 29.

LECTURERS.

Prof. D. HAYES AGNEW, M.D.	Surgery.
WILLIAM PEPPER, M.D.	Clinical Medicine and Physical Diagnosis.
WILLIAM F. NORRIS, M.D.	Diseases of the Eye and Ear.
JAMES TYSON, M.D.	Microscopy and Urinary Chemistry.
WILLIAM GOODELL, M.D.	Diseases of Women and Children.
H. LENOX HODGE, M.D.	Regional Anatomy.
JAMES E. GARRETSON, M.D.	Surgical Diseases of the Mouth.
GEORGE STRAWBRIDGE, M.D.	Diseases of the Eye and Ear.
LOUIS A. DUHRING, M.D.	Diseases of the Skin.

The FEE for the Course upon Regional Anatomy is \$10.

All the other Lectures and Clinics are free to Matriculates.

R. E. ROGERS, M.D., *Dean.*

TO MEDICAL GRADUATES.

DR. HORATIO ROBINSON STORER (late Professor at the Berkshire Medical College) will deliver his Ninth Private Course of Twelve Lectures on the Treatment of the Surgical Diseases of Women, during the first fortnight of June, 1872, commencing on Saturday, June 1, at 4 P.M. Fee, \$50.

The Course is intended to cover all that is yet known of Pelvic Surgery in the Female; and while interesting both to general and special practitioners, it commends itself particularly to those teaching, or desiring to teach, gynecology at hospitals and medical colleges.

Applicants for the certificate of attendance will be required, as in previous years, to furnish evidence of good professional standing, as defined by the American Medical Association.

Boston, March 15, 1872.

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